ANNALS OF MEDICAL HISTORY

PUBLISHED BIMONTHLY

New Series, Vol. VI, No. 5 SEPTEMBER, 1934 Whole No. 75

EDITOR

FRANCIS R. PACKARD, M.D., Philadelphia, Pa.

ASSOCIATE EDITORS

HARVEY CUSHING, M.D.	Boston
IRVING S. CUTTER, M.D.	Chicago
CHARLES L. DANA, M.D.	New York
GEORGE DOCK, M.D.	Pasadena
FIELDING H. GARRISON, M.D.	Baltimore
HENRY BARTON JACOBS, M.D.	Baltimore
HOWARD A. KELLY, M.D.	Baltimore
ARNOLD C. KLEBS, M.D.	Nyon
SAMUEL W. LAMBERT, M.D.	New York
THOMAS McCRAE, M.D.	Philadelphia
LEWIS STEPHEN PILCHER, M.D.	Brooklyn
SIR D'ARCY POWER, K.B.E., F.R.C.S.(ENG.), F.S.A.	London
DAVID RIESMAN, M.D.	Philadelphia
SIR HUMPHRY ROLLESTON, BART., G.C.V.O., M.D.	London
JOHN RUHRÄH, M.D.	Baltimore
CHARLES SINGER, M.D.	London
EDWARD C. STREETER, M.D.	Boston
CASEY A. WOOD, M.D.	Chicago

NEW YORK
PAUL B. HOEBER, INC., PUBLISHERS
SEVENTY-SIX FIFTH AVENUE

ANNALS OF MEDICAL HISTORY

NEW SERIES, VOL. VI, NO. 5 SEPTEMBER, 1934 WHOLE NO. 75

CONTENTS

PAGE
PORTRAIT OF DOMINIC JOHN CORRIGAN . . . . Cover

PORTRAIT OF D. WARREN BRICKELL . . . . *Frontispiece*

DOMINIC JOHN CORRIGAN AND THE WATER-HAMMER PULSE. . . . . GEORGE DOCK. 381

L'HOTEL-DIEU DE QUEBEC. . . . . WILLIAM BOYMAN HOWELL . 396

THE FIRST CHOLERA EPIDEMIC IN COLUMBUS, OHIO . . . . JONATHAN FORMAN . . . 410

HISTORY OF MEDICAL EDUCATION IN NEW ORLEANS (PART II). . . . . . . A. E. FOSSIER. 427

EUROPEAN ANATOMY BEFORE VESALIUS (PART II) . . . . WILFRED TAYLOR DEMPSTER 448

EDITORIAL 470

POETRY AND THE DOCTORS

BOOK REVIEWS 472

SPECTOR: ONE HOUR OF MEDICAL HISTORY; BROWN: SCIENTIFIC ORGANIZATION IN SEVENTEENTH CENTURY FRANCE; ABBOTT: JOURNAL OF TECHNICAL METHODS AND BULLETIN OF THE INTERNATIONAL ASSOCIATION OF MEDICAL MUSEUMS; HABERLING: GERMAN MEDICINE.

Original articles are published only with the understanding that they are contributed exclusively to the ANNALS OF MEDICAL HISTORY. Manuscripts offered for publication, books for review, and all correspondence relating to the editorial management should be addressed to the Editor, Dr. FRANCIS R. PACKARD, 302 South 19th Street, Philadelphia, Pa.

Communications regarding subscriptions, reprints, and all matters regarding the business management of the ANNALS OF MEDICAL HISTORY should be addressed to the publishers, PAUL B. HOEBER, INC. 76 Fifth Avenue, New York City. [Cable address, Formed N. Y.]

The ANNALS OF MEDICAL HISTORY is published six times a year, the six issues comprising one volume. No advertising is carried. The subscription price is $10.00 a year, foreign $11.00. Current single numbers $2.50 per copy. A few sets of first series, Volumes I–X, are available in parts as published at $100.00 per set, or bound in boards, paper sides, canvas back, paper label, $135.00 per set. Price on available single volumes or numbers will be quoted on request.

Entered as second-class matter, June 2, 1917, at the Post Office, New York, N. Y., under the Act of March 3, 1879.

Copyright, 1934, by Paul B. Hoeber, Inc.

Frontispiece
Annals of Medical History
September, 1934

DR. WARREN BRICKELL

[From Schenckius: Observationum Medicarum, Francofurti, 1609.]

ANNALS OF MEDICAL HISTORY

New Series, Volume VI   September, 1934   Number 5

I. DOMINIC JOHN CORRIGAN; HIS PLACE IN THE DEVELOPMENT OF OUR KNOWLEDGE OF CARDIAC DISEASE

II. THE WATER-HAMMER PULSE*

By GEORGE DOCK, M.D.

PASADENA, CALIF.

THE idea of celebrating the 100th anniversary of Dominic Corrigan's paper on Aortic Regurgitation is a happy one, for that event marked an epoch in the development of cardiac diagnosis. One hundred years ago the general practitioner and the general public knew little about the subject, experts were few, and their knowledge limited. As an index to the situation, just as Laennec was discovering mediate auscultation American physicians were offered an English translation, by Edwin A. Atlee, M.D., of Philadelphia, of a work on the Practice of Medicine by Dr. Joseph Lieutaud,[1] First Physician to Louis XV, and one of the leading medical authors and authorities of France in his time. If the reader expected novelties in the new edition of a work fifty years old, he was disappointed. The subject of heart disease was limited to Palpitation and Syncope, and these chapters showed no advance over the work of Aretaeus the Cappadocian, who lived in the time of Vespasian and Nero, and whose vivid descriptions of disease were copied by all writers in the intervening centuries. Palpitation was assigned to the same group as tremor, convulsions, and various kinds of rigors, such as those from exposure to cold. Two centuries before Corrigan, in 1628, Willian Harvey had made clear the essential features of heart mechanism, and, although he had no knowledge of the capillary circulation, he realized the functions of the heart, had heard the sounds made by that organ, and described a case of cardiac infarct with rupture.

---

* Read in part at a meeting of the Los Angeles County Heart Association, Sept. 23, 1932, in honor of Dominic John Corrigan.

In the two centuries between Harvey and Corrigan, progress was small. Even before Harvey there were a few observations on diseased hearts, and the industrious John Forbes[2] found half a dozen between 1497 and 1618. One of these is mentioned in the Osler Catalogue, viz., Eustachius Rudius, "de Naturali atque morbosa cordis constitutione," Venet., 1600. After Harvey's publication references to symptoms and anatomical alterations did not become more numerous until the 18th century when some important monographs appeared. The most noteworthy were those of Vieussens,[3] Lancisi,[4] Jean Senac,[5] and J. F. Meckel.[6] Morgagni's "Seats and Causes of Disease Investigated by Anatomy," 1761, like the foregoing and some others, gave descriptions of anatomical alterations in the heart that struck the attention of reporters, and Morgagni described more symptoms than the others, although most of his clinical facts were obtained from the family physician, or from neighbors of the patients. The next contribution of moment was based on the clinical lectures of Jean Nicolas Corvisart,[7] and first published in 1806. In that book we can learn how the industry and genius of Corvisart made him the founder of clinical medicine in France, and secured for him the confidence and influence of Napoleon. Corvisart realized the importance of Auenbrugger's discovery of percussion more than any contemporary, and by the application of his anatomical knowledge, his clinical observation, his cultivated touch and percussion, he advanced immeasurably cardiac diagnosis. He recognized valvular disease, but could not assign the symptoms to the valve affected. To do that it was necessary to have a new method of investigation of cardiac activity, and this Laennec had the merit of giving the world in mediate auscultation. By this discovery the prediction of Robert Hooke was realized after more than a century and I make no excuses for quoting that inventive and versatile genius in this epoch of extraordinary inventions. I have taken an extract from John Tyndall's celebrated "Lectures on Sound"; as he said, "a quaint and beautiful extract from the writings of that admirable thinker, Dr. Robert Hooke. It will be noticed," continued Tyndall, "that the philosophy of the stethoscope is enunciated in the following passage, and another could hardly be found which illustrates so well that action of the scientific imagination which, in all great investigators, is the precursor and associate of experiment."

Hooke wrote:

> There may also be a possibility of discovering the internal motions and actions of bodies by the sound they make. Who knows but that, as in a watch, we may hear the beating of the balance, and the running of the wheels, and the striking of the hammers, and the grating of the teeth, and multitudes of other noises; who knows, I say, but that it may be possible to discover the motions of the internal parts of bodies, whether animal, vegetable, or mineral, by the sound they make; that one may discover the works performed in the several offices and shops of a man's body, and thereby discover what instrument or engine is out of order, what works are going on at several times, and lie still at others, and the like. . . . I have been able to hear very plainly the beating of a man's heart, and it is com-

> mon to hear the motion of wind too and fro in the guts, and other small vessels; the stopping of the lungs is easily discovered by the wheezing, the stopping of the head by the humming and whistling noises, the slipping too and fro of the joints, in many cases, by crackling, and the like. . . . So to their becoming sensible they require either that motions be increased, or that the organ be made more nice and powerful to sensate and distinguish them.

But this suggestive passage had no more effect upon physicians than had the tradition that Hippocrates utilized the sound of the thoracic splash in the diagnosis of pleural diseases. A few inquisitive men now and then through the next century after Hooke recorded strange noises in the chest. Some of the patients, especially those that presented sounds compared to those of aneurismal varix, probably had valvular disease, but no one systematically and methodically followed up the subject. F. J. Double,[8] for example, in 1817 said he used direct auscultation of the lungs and heart but he gave no practical details. Even the disclosure of the clinical value of sounds made on the body by percussion did not soon lead to the study of noises originating there. But after Corvisart revived percussion, his associates began the practice of auscultation with the ear to the chest. Among these was R. T. H. Laennec, then about twenty-five years old. But in hospital practice such work was unpleasant, so that it was not always done. In private practice obesity, and sometimes a fear of offending modesty, interfered. But in Laennec the urge to use his ears was strong, and when one day, crossing the courtyard of the Louvre, he saw some children listening at one end of a beam of wood to the sound made by striking with a pin on the other end, he had the inspiration of mediate auscultation. With an improvised stethoscope he tried this in the hospital and soon after on a fat and bashful private patient. With the enthusiastic aid of his staff he accumulated material so successfully that in two years he read a communication on the subject before the Académie des Sciences, and a year later published the first edition of his book.[9]

In contrast to the experiences of Harvey and Auenbrugger with their medical innovations, Laennec rapidly acquired disciples. In France, and especially in England, bright young medical men took up the new art with enthusiasm, but also with constructive criticism, for Laennec had many obscurities and imperfections in his text, especially in the chapters on the organs of circulation. William Stokes, James Hope, C. J. B. Williams and others strove with notable success to make the new knowledge more simple and more accurate. Stokes and Dominic John Corrigan graduated in the same class in medicine at Edinburgh, in 1825. Stokes began writing early, with a textbook on auscultation.[10] In the Preface, Stokes modestly spoke of the excellent books already available, and made a brief claim for the practical value of auscultation. To the text he added an abridged translation of Andral's "Thesis on Expectoration," Paris, 1821. The whole made a book of 226 pages.

Corrigan settled in his native Dublin and busied himself with dispensary work, with the idea he later expressed in a lecture, quoting Bichat to the effect that the student should investigate disease rather than read about it. By 1829 he thought he had something to report, and wisely chose a conspicuous medium. The London *Lancet*, begun in 1823, was in its most militant period. The celebrated libel suit of Cooper vs. Wakley, the editor, was appearing weekly without concern over possible contempt of court. The trial of body-snatcher Burke was also attracting attention. In the number for February 7, 1829, is a paper by Corrigan,[11] who was then Lecturer on the Institutes and Practice of Medicine, and one of the Physicians of the Sick-Poor Institution, Dublin. This is the account of a case of aneurysm, well presented and well discussed from the standpoints of diagnosis and treatment, and proving the value of the new art of auscultation, of which many physicians were still skeptical. Corrigan also expressed the hope of improvement in treatment, for which there was abundant need. The "singular pulsations" in the brachials, carotids, and other arteries, as if the vessels, previously empty, had suddenly become filled, Corrigan thought signs of aneurysm, and that they might help in the diagnosis of future cases. But in his article on aortic regurgitation he had to admit there was aortic incompetence in addition to the aneurysm, in the case just cited, and that the pulsations were due to valvular disease.

In the next volume of the *Lancet*,[12] Corrigan published an "Inquiry into the Causes of Bruit de Soufflet and Fremissement cataire." In the early days of auscultation no effort was made by English writers to translate the new technical terms, which were simply words from the French vernacular. Even now we still use many words, "rale" and "bruit," although rattle and murmur are just as descriptive. Laennec thought bruit de soufflet, that is a noise like that produced by a hand-bellows, was due to spasm, and he was also unable to explain fremissement or thrill. Corrigan discussed both phenomena, and in the next number of the *Lancet*[13] he described some experiments with pipes, that need not be detailed, and explained the signs on purely physical causes. He there made the first suggestion of what Chauveau and Savart long afterwards described as "fluid veins," or eddies, in the vessels. The style of the article is calm and logical, in contrast to the controversial manner of some contemporary writers.

Corrigan published a paper "On the Motions and Sounds of the Heart,"[13a] in which he reported investigations carried out with the assistance of J. C. Ferguson and P. Hunt, and directed chiefly against the explanations of Laennec. He pointed out that the cardiac impulse is caused by the contraction of the auricles; the first sound by the "rush of blood from the auricles into the dilating ventricles," the "second sound by the striking together of the internal surfaces of the ventricles." The article brought out an Editorial in the *Lancet*, September 18, 1830, p. 964, and a somewhat bitter review by James Hope, in the *Medico-Chirurgical Review*, July 1, 1830, pp. 122–133. Hope admitted that his ideas on the heart sounds were not very different from Corrigan's, but he did not accept Corrigan's view that the impulse of the heart is not the gauge of hypertrophy of the ventricles.

Studies on the motion of the heart, and the causes of the sounds were being actively carried out about that time, as they had been since the time of Harvey. Having no recording apparatus the results were contradictory, and Corrigan's opinion of such work can be understood from a passage in a review of Bouillaud's book on "Heart Disease" in the *Dublin Journal* (9: 489, 1836):

> Senac tells us that the movements of the heart having given rise to much controversy, the Royal Academy ordered a grand field day, when actual inspection should be made in the presence of the members of the movements of the heart in living animals, and then by their evidence and their fiat, all doubt should be removed. The day came; the animals were tortured; the movements looked at; and the Academy came to the conclusion that it could come to no conclusion at all.

Soon after, Corrigan[14] had a paper "On the Epidemic Fever of Ireland." This is a strong presentation of the relation of starvation to typhus fever in Ireland, with statistics and details of living conditions, and purposely avoiding discussion of contagion. It shows that Corrigan's interest and activities were not limited to physical diagnosis, but included general medical and social-medical topics. In the famine of 1817–1818 one sixth of the population of Ireland passed through the fever hospitals. More poor than rich were affected, with a mortality of one to thirty, whereas of the rich, one-third of those affected died. The article was reprinted as a pamphlet of thirty-three pages in 1841, and the *London Medical Gazette* (n. s. 2: 385), in a review in 1846, also a famine year, spoke of the author as a man of humane feeling, and a sound physician. In this latter year Corrigan published a series of lectures on Fevers that do not require consideration now.

The article that established Corrigan's fame was published in the *Edinburgh Medical and Surgical Journal*, in the number for April 1, 1832, pp. 225–245.[15] Corrigan was then one of the Physicians to the Charitable Infirmary, Jervis Street, Dublin, and Consulting Physician to St. Patrick's College, Maynooth. The beginning of this article illustrates Corrigan's terse and clear style:

> The disease to which the above name is given has not, so far as I am aware, been described in any of the works on diseases of the heart. The object of the present paper is to supply that deficiency. The disease is not uncommon. It forms a considerable proportion of cases of deranged action of the heart, and it deserves attention from its peculiar signs, its progress, and its treatment. The pathological essence of the disease consists in inefficiency of the valvular apparatus at the mouth of the aorta, in consequence of which the blood sent into the aorta regurgitates into the ventricle. This regurgitation, and the signs by which it is denoted, are not necessarily connected with one particular change of structure in the valvular apparatus, and hence the name Permanent Patency of the mouth of the aorta, or Inadequacy of the Aortic Valves, has been chosen as simply expressing such a state of the parts as permits the regurgitation to occur.

Corrigan says he described the disease for some years as "inadequacy of the aortic valves," but took up "permanent patency" following Elliotson. The conditions in the valves are briefly described, viz.: reticulation; rupture; tightened or curled; dilatation of the mouth of the aorta. The general symptoms are uncertain and unsatisfactory. There are frequent convulsive attacks of cough; dyspnea; sense of straitness and oppression across the chest; palpitation after exercise; sounds of rushing in the ears; inability to lie down. None of these is essential. The physical signs are: (1)

visible pulsations of the arteries of the head and upper extremities, (2) bruit de soufflet in the ascending aorta, carotids, and subclavians, (3) bruit de soufflet and fremissement, or a peculiar rushing thrill felt by the fingers in the carotid and subclavian arteries.

> These three are so intimately connected with the pathological cause of the disease, and arise so directly from mechanical inadequacy of the valves, that they afford unerring indications of the nature of the disease. In conjunction with these may be reckoned the pulse, which is invariably full. There are singular pulsations in the superficial vessels. From its singular and striking appearance, the name of visible pulsation is given to this beating of the arteries. . . . The sudden and great diastole of the vessels makes the visible pulsation. This is more distinct in the upper parts; more when standing than when lying.

One patient discovered he could increase the pulsations by elevating his arms. Elevating the legs caused similar phenomena there. Corrigan recalled his discussion of bruit de soufflet previously referred to, his experiments, and the description of the abnormal currents. He noted the double murmur in some cases. A patient discovered this for himself, and explained it by the blood rushing to and from the heart. Only one case was seen as early as twenty years. Only one in eleven had had rheumatism. Many gave histories of "inflammatory disease of the chest." Painful symptoms occurred in the last stage. Death was from exhaustion, and not pulmonary congestion, as in mitral disease. The duration varied from two to seven or eight years.

Corrigan gave the differential diagnosis, beginning with aortic stenosis, with its slow pulse. In aortic inadequacy the pulse is "invariably full and swelling." The resemblance to the pulsations in aortic aneurysm was discussed. Both may show pulsations at the aortic notch. He made the statement, "in permanent patency of the mouth of the aorta the fatal result is never sudden." He described a "nervous palpitation," in the arteries simulating aortic disease, and even with murmur under excitement. He emphasized that pressure with the stethoscope was to be avoided in auscultation of the arteries. He discussed the erroneous treatment of previous authors. Corvisart, for example, tried to diminish the general strength of the patient and also that of the heart. Laennec and also Bertin used general and local bleedings, low diet, and digitalis. The treatment was essentially antiphlogistic, and calculated to produce debility. Corrigan said:

> A little reflection on the nature of the disease before us will show that these principles are inapplicable both to the treatment of the valvular alterations, and of the hypertrophy of the left ventricle which accompanies that alteration. The physical condition requires hypertrophy and so we need strengthening of the general constitution, which will give proportional vigor to the heart. Hence there should be general and sufficient diet of animal and vegetable food, and at the same time abstinence from those beverages, such as malt liquors, which increase the mass of the fluids. The patient may attend to business or profession, but should avoid so much attention as to produce debility. . . . And as there is among patients who have learned that they are afflicted with heart disease an universal dread of sudden death, it is necessary to undeceive them on this point; and in the present instance it can be done with perfect safety, as the

termination of the disease is never sudden.

He cited a case showing the bad effect of other treatment, with bleeding after bleeding, blister after blister, starvation, and digitalis. With a change on the lines Corrigan indicated, improvement followed. He objected to digitalis because it makes the pauses longer, when an increased rate would be better. Inflammatory complications, pneumonia, rheumatism, etc., require prompt and effective depletion. "Bleeding in these cases never produced fainting," but a full dose of opium should be given after bleeding. No medicine would help the valves. Salivation might be tried early in rheumatism. Finally, he repeated the statement about the improbability of sudden death.

It is unnecessary to indicate the good and bad points in this account. A short time after its publication Corrigan sent a paper "On the Treatment of Recent Catarrh" to the *Dublin Journal of Medicine and Chemistry* (1: 7, 1832), in which he said: "Had I known at an earlier date of the forthcoming of an Irish Periodical, I might have had a better offering to present," so his own opinion of the paper was probably a good one. In the same number of the *Dublin Journal* there was an abstract of the Permanent Patency article (pp. 242–243).

As so often happens when medical novelties are made public, claims of priority arose. Old cases were exhumed from the literature. The most noteworthy of the very early cases were those of William Cowper, in 1706, and Raymond Vieussens in 1715. Both accounts are easily accessible in the admirable "Classic Descriptions of Disease" by Dr. Ralph H. Major, 1932, and I omit references. Neither account, I need hardly say, led others to seek for and report similar cases. Vieussens' case was very striking, and leaves no doubt as to the nature of the disease, while the description of the pulse is so good that it is worth repeating (Ref. 3, p. 107). A man of thirty-five, sick for many years, was found prostrated, with pale and puffy face. "The pulse was very full, very fast, hard and unequal, and so strong the arteries on both sides struck the fingers like a tense cord vibrating violently. I never saw and never hope to see the like." Post mortem, extensive disease of the aortic semilunar valves was found.

The most important claim made was that regarding the paper of Thomas Hodgkin. It is interesting that the claim was made by Samuel Wilks in 1871.[16] In this Wilks pointed out that Corrigan laid stress chiefly on throbbing and visibility of the smaller arteries, less on the collapsing pulse, and that Hodgkin, five years before Corrigan's paper, gave a far better account and had a far deeper insight into aortic disease than any other man of the year 1827. It is therefore necessary to examine Hodgkin's paper and see its relation to the subject. It is interesting that it was the same Wilks, afterwards Sir Samuel Wilks, who rescued from oblivion Hodgkin's report of certain lymphatic diseases, one of which is now called after him.

Hodgkin's communication[17] was read before the Hunterian Society February 21, 1827, and February 18, 1829, that is with an interval of two years, in the form of two letters to his friend Aston Key, addressed to "My dear Friend," and as they were both members of the Society of Friends, used the "plain language." The first letter begins: "Thou wilt probably recollect having pointed out to me a few months ago, a particular state of the valves of the aorta, which, by admitting of their falling back towards the ventricle, unfits them for the performance of their function." Hodgkin stated, quite accurately, that "Corvisart, Laennec, Bertin, Rostan, Bouillaud, and Andral had none of them made any allusion to it." He described the condition of the valves, their loose edge considerably stretched and lengthened, "hence when raised and applied to the sides of the vessels, instead of forming a straight or rather concave line, they form a curved one, with its convexity upwards. In some instances there is a manifest laceration of the edge. . . . The structure of the valves is more or less thickened, and the appearance of the corpora Arantii is nearly lost." There are two cases with no clinical details; in another there was "anasarca, irregular heart with impulse tumultuous and strong; some contractions lost at the wrist. The pulsations of the carotid were strong and attended with bruit de scie, which disappeared before death." Post mortem, there was retroversion attended with dilatation and thickening of the left ventricle. In two cases where the pulse is mentioned it was weak in proportion to the heart beat. In the second letter Hodgkin cited the case of Dr. Cox, twenty-eight years old, an athlete. After an attack of syncope following transient mental excitement, there was inordinately violent arterial action, rapid, frequent, and regular. There was a remarkable thrill in the pulse, and the carotids were seen violently beating on both sides. The contractions of the ventricles were strong, and there was a constant bruit de scie, which presented this peculiarity that it was double, attending systole as well as diastole. In another case bounding pulse is mentioned, and in still another, bounding carotids. "The peculiar thrill which was observed in the pulse," Hodgkin said, "might be ascribed to the interruption of the progressive current which must have taken place whenever the elongated valve passed its more healthy fellows, as it was carried from the ventricle into the aorta." He considered excessive muscular effort, or a sudden and violent mental emotion, might be exciting causes for the condition.

There can be no doubt that Hodgkin recognized some of the chief signs of aortic regurgitation, but his mode of presentation, and probably a lack of authority on the part of the periodical in which the letters were printed, prevented him from gaining the recognition he deserved. Wilks[18] returned to the subject in 1878, and pointed out that Corrigan had no better view than Hodgkin of the cause of the murmur, and that it must be presumed his historical association with the disease rests upon his description of the pulse, with its throbbing and its visibility. As he pointed out, Hodgkin knew that bleeding and depletion were bad in aortic regurgitation.

On the whole, the immediate reception of Corrigan's paper was favorable. Graves,[19] in a clinical lecture, presenting a patient with visible pulsation in one arm, said that Corrigan, "in his very ingenious essay" has insisted on leaping of the arteries as a diagnostic sign, but that the symptoms given by him are extremely uncertain, and too hastily established. However, he disclaimed any intention of minimising Corrigan's work, which was ably and well presented.

A more discordant note appears in the work of James Hope, whose book on the "Diseases of the Heart and Great Vessels" forms a landmark in medical literature. The first edition appeared in 1831. I quote from the third edition, London, 1839. In a footnote (p. 71), Hope claimed the discovery of the regurgitations as his own, made in 1825 in the case of Christian Anderson, and said he "taught the regurgitations at St. Bartholomew's Hospital in 1826, and at La Charité, Paris, in 1827." He went on to say that Dr. Corrigan, "not aware of Dr. Elliotson's publication and my own, subsequently published a paper on a new disease of the heart, viz., permanent patency of the mouth of the aorta." Speaking of aortic regurgitation (p. 380) he says he described the peculiar pulse in 1831, but was in doubt as to its relation, because in the early cases regurgitation was combined with inflammation of the heart or adhesion of the pericardium. He then said, "Dr. Corrigan who wrote in 1832 or 1833 on permanent patency of the aortic valves as a supposed new disease, has so completely overlooked this pulse as even to state the reverse: 'it rises without any jerk under the finger.'" Dr. Hope overlooked the fact that the reference is to a different article from that of 1832 or 1833, but his criticism of Corrigan's description has some foundation. He himself was not accurate in his timing of heart sounds and the case of Christian Anderson is by no means clear as to aortic regurgitation.

A few favorable opinions may be cited. In the translation of Laennec edited by Theophilus Herbert, London, 1846, there is a note by the editor (p. 848), on Andral's comment on valvular insufficiency: "to Dr. Corrigan of Dublin we are in the first instance indebted for a knowledge of this structural anomaly." Dr. Walter Walshe in his "Practical Treatise on the Diseases of the Lungs and Heart," (Philadelphia, 1851, p. 225) says: "Aortic regurgitant disease, as first shown by Dr. Corrigan, renders the pulsation of the superficial vessels visible." Dr. William Stokes, "Diseases of the Heart and Aorta," (Philadelphia, 1855) speaking of aortic regurgitation, says: "We owe the diagnosis of this disease to Dr. Corrigan." Dr. A. Duchek, who wrote the volume on "Diseases of the Heart and Arteries" in the "Handbuch der speciellen Pathologie und Therapie" (Erlangen, 1862, p. 151), says: "We must name Corrigan, who introduced the term insufficience and showed the signs of aortic insufficiency, as the discoverer of this functional anomaly." On p. 187 he gave Corrigan credit for first observing the pulse of unfilled arteries, or the collapsing pulse. Trousseau, in his celebrated "Clinique medicale de l'Hotel Dieu de Paris," 1861–1865 (1: 728), spoke of the "strong and rebounding pulse, with tortuous radial artery, on which Corrigan insisted, and which is of great diagnostic value." He also said aortic regurgitation was called Corrigan's disease. Dr. C. Hilton Fagge, in Reynold's System, 1880, Vol. 2, says: "But it was Sir Dominick Corrigan, who in 1832 first laid stress on the peculiarity of the pulse (in aortic regurgitation), a fact commemorated in the designation of 'Corrigan's pulse,' which is commonly applied to it both on the Continent and in this country." He also quoted the text describing the visible features of the pulse in aortic regurgitation, so that it has been called "locomotive pulse but also jerking, splashing, or collapsing pulse, or as the water-hammer pulse, from the well known scientific toy of that name." Dr. John F. H. Broadbent, in his book on "Heart Disease" (New York, 1906), said: "This is the well known collapsing or water-hammer pulse, sometimes named after Corrigan, who is believed to have first called attention to it."

I intend to speak more at length of the water-hammer pulse, and think I have shown that to Corrigan the visible changes in the peripheral arteries were most important, and that his pulse feeling is very inadequately described. Some early critics pointed out imperfections regarding details of murmurs, pulse and prognosis. They themselves did not realize in the infancy of physical diagnosis that the complete picture of the disease could rarely be obtained from a small series of cases observed over a short time. They missed the capillary pulse described by Quincke, the uvular pulse of Fr. Mueller, and other details. Even now aortic regurgitation is sometimes overlooked because the patient may be seen when there are no murmurs, and no peculiarities of visible pulse, the pulsus celer being overlooked.

To return to Corrigan's original papers, in 1833[20] we find "A new method of making an early diagnosis of aneurysm of the Abdominal Aorta," with cases well reported.

In 1836,[21] "Observations on Bruit de Cuir Neuf or Leather Creak as a Diagnostic Sign in Abdominal Disease," showing that creak is not a sign of hydatid cyst only. This sign was first described by Collin and investigated by Stokes.

Corrigan[22] wrote again of the "Mechanism of Bruit de Soufflet," an excellent article continuing previous investigations, and again discussing the currents that play a part in the production of murmurs.

In the same Journal,[23] he reported "On Aortitis, as one of the Causes of Angina Pectoris; with Observations on its Nature and Treatment." He cited cases of Portal and Bouillaud, and several of his own, recommending treatment by local bleeding, counter-irritation and mercury. This explanation of the cause of angina pectoris, so brilliantly advocated by Sir Clifford Allbutt, was not known to the latter until 1908.[24]

An article that added much to Corrigan's reputation[25] was "On Cirrhosis of the Lung," which was read at the Evening Meeting of the College of Physicians, March 19, 1838. The clinical and gross anatomical details show close observation and keen interpretation, but the time was too early for histological investigation. The name was taken from Laennec, the author saying that "this disease is in the lung what cirrhosis is in the liver." Corrigan recognized Laennec's error in taking the liver lobules in the sclerotic tissue for "new structures." He showed the different results in the two organs affected, the shrinking of the liver as contrasted with the dilatation of the bronchi, the displacement of adjacent organs, the simulation of phthisis by the physical signs, and sometimes hemoptysis. He recognized that the process was slow and inflammatory. As to treatment, he was still in the mercury and tartar emetic stage, but wisely advised efforts at the development of the sound lung. As Corrigan became more and more engaged in practice and public duties, to be mentioned later, his medical contributions became farther apart; he added no more cardiac details. Occasional items in medical periodicals add to our knowledge of the man.

In the *British Medical Journal*,[26] July 20, 1867, p. 54, there is a letter from the Medical Faculty of the University of Erlangen complaining of the action taken by the General Council of Medical Education and Registration, in the matter of German diplomas, and especially of a speech by Dr. Corrigan (Report of debate, *Brit. M. J.*, June 15, 1867). Sir Dominic made a vigorous reply, pointing out that the reform in the selling of medical diplomas might be abrogated later, and in that case one could get a medical degree for a bill of exchange, just as one could get a cask of Bavarian beer.

In the same year[27] he gave the Address in Medicine before the British Medical Association at the meeting in Dublin, Stokes being President. Corrigan made a vigorous plea for better medical education and referred to German and American diplomas.

Corrigan was born December 1, 1802. He kept up an active life until two years before the end, from hemiplegia, February 1, 1880. Obituary notices in medical and lay journals soon after his death were uniformly laudatory. The article in the Dictionary of National Biography is less so. Although Corrigan did not have the educational advantages of his famous Irish contemporaries, he was probably without an equal among the latter as a master of terse English. Like many Irishmen of the period he was familiar with French; as a Catholic, educated in a Seminary school, he knew Latin, and he quoted Greek at least once in a public address. His knowledge of the physics of the time was sound. He was one of the few men of whom it has been said that he was a classic in his lifetime. One who had been a pupil has recorded that his portrayal of disease had never been excelled for terseness and accuracy. He never lectured more than half an hour at a time, worth noting in these radio days. As a physician he was recognized as the most prominent of his race and religion in Ireland. Reflecting that, his professional income was said to have exceeded that ever received by any other Dublin practitioner. Black-balled when he first sought election to the Irish College of Physicians, he was later elected to Membership, and served five terms as President (1859–1864). He was made Baronet in 1866; was appointed Physician to the Queen in Ireland, and was in Parliament from 1870 to 1874. While he made no great figure there he took his duties seriously. He usually voted with the Liberals, opposed Home Rule, and favored Sunday closing. He represented the Senate of Queen's University of Dublin on the General Medical Council of Great Britian for many years, and was a staunch advocate of better medical education. He was one of the Founders of the Pathological Society of Dublin, and President. An ardent zoologist, he was President of the Royal Zoological Society of Ireland, and while in parliament it was his habit to take the Friday night steamer, so he could take breakfast with the Council on Saturday morning.

THE WATER-HAMMER PULSE

I have quoted Fagge and Broadbent on the water-hammer pulse, and from their remarks one can see that they did not attribute the name to Corrigan. This was done, however, by Sir Clifford Allbutt,[28] who said:

> The character of the pulse is well known. The gifted physician to whom we owe most of our knowledge of this subject has given a memorable description of it. Corrigan compared it to the water-hammer, a toy in which water, imprisoned in an exhausted tube, falls, on every turn of the tube, from end to end, with a thud.

When I began to study physical diagnosis in 1882 all my teachers used the term water-hammer synonymously with Corrigan, and in favorable cases the reason was clear. For before that time a water-hammer was one of the few pieces of apparatus, along with an inclined plane, pulleys, and a balance, available for demonstration in lectures on Physics, and every medical student was familiar with it and recalled the tactile sensations when the instrument was named. When I began to teach physical diagnosis I got a water-hammer and had each student handle it when we had a case of aortic regurgitation. But when many years later, about 1915, I needed another water-hammer I found there were none in stock, and when I had one made to order I found students were not familiar with either the instrument or the feeling produced by its use. This is so now, in my part of the country, and neither teachers nor undergraduates understand what is intended by the allusion, or they think of the "water-hammer" in a steam pipe.

I had read Corrigan's paper early in my teaching days, thought it not as complete as current works, but could not find the water-hammer mentioned. I did not then follow the matter farther, but recently, when preparing for the Corrigan anniversary, I read all of Corrigan's articles with no more success. Neither in his own articles, nor in those of several of his contemporaries could I find the reference I expected to see. Sir Humphry Rolleston (personal communication) tells me that he had a similar experience. I enlisted the coöperation of Dr. William Dock, of Stanford University, who had access to the larger material of Lane Library, but after considerable search, including articles and case-histories of the time, he could find nothing more. By this time the matter had become very intriguing, and we took it up more systematically. For a long time the earliest use we could find was in an article by A. L. Galabin, M. A., M. D.,[29] "On the Causation of the Water-hammer Pulse, etc." Galabin's words in the text show that neither he nor Corrigan introduced the term. He said:

> I will first refer to a character on which Sir Dominic Corrigan does not lay stress in the article I have quoted, but one which is well known to every one, and which has given to this form of pulse the title which I have taken in the heading of my paper, namely, that of water-hammer pulse. The quality which is well expressed by this name is that of extreme suddenness in the commencement of the pulse, which in marked cases gives to the finger the impression of a sudden blow or jar.

It is not necessary to analyze the paper, which is based on sphygmographic studies, but it may be remarked that even in those early days Galabin knew the tracings were not always characteristic, and that the "quality of suddenness is only an exaggeration to an extreme degree of a change which takes place to some extent in the normal pulse."

Evidently, other terms than water-hammer must have been used between the time of Corrigan's paper and that of Galabin, or somewhat later. I give a few, gathered from works on Diagnosis or Medicine. Charles Cowan, 1836: Corrigan's visible pulse; Andry, 1843: vibrant; Henry I. Bowditch, 1846: jerking; W. H. Walshe, 1851: hammering; "What to Observe," published under authority of the London Medical Society of Observation, 1855: hammering; A. W. Barclay, 1858: hammering; jerky; thrilling; David Wooster, 1867: hammering; E. J. Woillez, 1879: brusque, vibrating, visible (Corrigan); J. M. Fothergill, 1879: water-hammer; A. M. Corwin, 1879: water-hammer, pistol, collapsing; de Haviland Hall, 1881: visible, locomotive; A. E. Sansom, 1881: locomotive of Sir Dominic Corrigan, Corrigan's or water-hammer, splashing; James Finlayson, 1886: water-hammer, from its sudden slapping or jerking character; the pulse of aortic regurgitation, from its cause; and Corrigan's pulse from its describer. In French and German works Corrigan is sometimes mentioned, but I have not found there the water-hammer. In American and British works after 1900 it is almost always given, with occasion novelties, such as trip-hammer (Tyson, Hare); shotty (Le Fevre).

Finally, William Dock found that G. H. Barlow[30] in 1852 has said: "this has been termed the splashing or water-hammer pulse," and a possible source in the Lectures of (later, Sir) Thomas Watson.[31] The Lectures were delivered in 1836 and 1837, and repeated for four years; published in the *London Medical Gazette* in 1840–1842, and in book form in 1843. The first Philadelphia edition[32] is dated 1844.

Unlike most of his predecessors, Watson felt that he could generally distinguish the valve affected. Under Aortic Regurgitation he said:

> Moreover, we are again assisted by the pulse. The pulse of aortic regurgitation is, sometimes at least, very striking and peculiar: sudden like the blow of a hammer, without any prolonged swell of an artery. It always reminds me of the well-known chemical toy, formed by including a small quantity of liquid in a glass tube, exhausted of air, and hermetically sealed. On reversing the tube the liquid falls from one end of it to the other with a hard, short knock, as if it were a mass of lead. The sensation given by the pulse, when there is much regurgitation through the aortic valves, is very similar to this. It is as if successive balls of blood were suddenly shot along under the finger. Dr. Hope calls this a jerking pulse; the pulse of unfilled arteries, and this abrupt pulse makes itself visible in the arteries; the wave of blood lifts, and moves, and sometimes contorts the vessel.

Watson tells of a case in which the "hard, sudden, hammering pulse" led to the diagnosis. For five years the patient's wife found it uncomfortable to take her husband's arm on account of the jarring blow. Neither Corrigan nor Hope is mentioned in the index of this edition of Watson, but Hope is quoted in the text.

This is the first positive indication we could find of the introduction of the water-hammer in diagnosis, and as the text shows, Watson did not explicitly use the term "water-hammer pulse." That it was not immediately taken up appears from a remark by O. B. Bellingham in the *Dublin Medical Press* of March, 1845: "Dr. Watson compares the aortic regurgitation pulse to the blow of a hammer," but not to that of a water-hammer.

In conclusion, "Corrigan pulse" should be applied, if at all, to visible phenomena, "water-hammer" to palpatory sensations. As the handling of water-hammers has been abandoned, the term should also be given up, and simple descriptions used. But the fact that many who disclaim any knowledge of the "chemical toy" of Watson continue to use the words suggests to Dr. William Dock the phonetic parallel between the words "water-hammer" and the palpatory sensations in the pulse, two hard beats clipped off sharply and followed each time by a syllable as weak and flat as the radial artery of such a patient in diastole. If this is so, the term may continue in use notwithstanding my effort to eradicate it, but the user may know he is guided by sentiment.

REFERENCES

1. Lieutaud, J. Synopsis of the Universal Practice of Medicine. Trans. by Edwin A. Atlee, Phila., 1816.
2. Forbes, J. Manual of Select Medical Bibliography. London, 1835.
3. Vieussens, R. Traité nouveau de la structure et des causes du mouvement naturel du coeur. Toulouse, 1715.
4. Lancisi, J. M. De motu cordis et aneurysmatibus, opus postumum. Rome, 1728.
5. Senac, J. Traité de la structure du coeur, et de ses maladies. Paris, 1749.
6. Meckel, J. F. Observations sur les maladies du coeur. Berlin, 1755.
7. Corvisart, J. N. Essaie sur les maladies et les lésions organiques du coeur et des gros vaisseaux. Paris, 1806.
8. Double, F. J. Séméiologie générale. Paris, 1817.
9. Laennec, R. T. H. De l'auscultation médiate, ou traité du diagnostic des maladies des poumons et du coeur, fondé principalemente sur ce nouveau moyen d'exploration. Paris, 1819.
10. Stokes, W. An Introduction to the Use of the Stethoscope, with its Application to the Diagnosis in Diseases of the Thoracic Viscera; including the Pathology of these Various Affections. Edinburgh, 1825.
11. Corrigan, D. J. Aneurism of the aorta. *Lancet*, 9: 586–90 (Feb. 7) 1829.
12. Corrigan, D. J. Inquiry into the causes of bruit de soufflet and fremissement cataire. *Lancet*, 2: 1–5 (April 4) 1828–29.
13. Corrigan, D. J. Bruit de soufflet. *Lancet*, p. 33–35 (April 11) 1829.

13a. Corrigan, D. J. On the motions and sounds of the heart. *Dublin Med. Trans.*, n. s. 1: pt. 1, 151–203, 1830.

14. Corrigan, D. J. On the epidemic fever of Ireland. *Lancet*, pp. 569–575, 600–605 (July 10) 1830.
15. Corrigan, D. J. On permanent patency of the mouth of the aorta, or inadequacy of the aortic valve. *Edinb. M. & S. J.*, pp. 225–245 (April 1) 1832.
16. Wilks, S. Note on the history of valvular disease of the heart. *Guy's Hosp. Rep.*, s. 3, 16: 209–216, 1871.
17. Hodgkin, T. Retroversion of the valves of the aorta. *London Med. Gaz.*, 3: 433–443, 1829.
18. Wilks, S. An account of some unpublished papers of the late Dr. Hodgkin. *Guy's Hosp. Rep.*, s. 3, 23: 55, 1878.
19. Graves, R. J. *London M. & S. J.*, p. 76 (Feb.) 1833.
20. Corrigan, D. J. A new method of making an early diagnosis of aneurism of the abdominal aorta. *Dublin J. M. & Chem. Sci.*, 2: 375–383, 1833.
21. Corrigan, D. J. Observations on bruit de cuir neuf, or leather creak as a diagnostic sign in abdominal disease. *Dublin J. M. Sc.*, 9: 392–401, 1836.
22. Corrigan, D. J. On the mechanism of bruit de soufflet. *Dublin J. M. Sc.*, 10: 173–197, 1836.
23. Corrigan, D. J. On aortitis, as one of the causes of angina pectoris, with observations on its nature and treatment. *Dublin J. M. Sc.*, 12: 243–254, 1838.
24. Rolleston, Sir H. *Irish J. M. Sc.*, pp. 261–266 (June) 1932.
25. Corrigan, D. J. On cirrhosis of the lung. *Dublin J. M. Sc.*, 13: 266–286 (March) 1838.
26. Corrigan, D. J. Reply to the Medical Faculty of the University of Erlangen. *Brit. M. J.*, p. 54 (July 20) 1867.

27. CORRIGAN, D. J. Address in medicine, British Medical Association, Dublin Meeting. *Brit. M. J.*, Aug. 7, 1867.

28. ALLBUTT, SIR C. Chapter on aortic regurgitation. In: Allbutt's System, 1909, 6: 458.

29. GALABIN, A. L. On the causation of the water-hammer pulse and its transformation in different arteries as illustrated by the graphic method. *Med. Chir. Trans.*, s. 2, 41: 361–388, 1876.

30. BARLOW, G. H. On the pulse. *Guy's Hosp. Rep.*, s. 2, 8: 59–68, 1852.

31. WATSON, T. Lectures on the principles and practice of physic. *London Med. Gaz.*, 1840–1842.

32. WATSON, T. Lectures on the Principles and Practice of Physic. Phila., 1844, p. 603.

*L'HOTEL-DIEU DE QUEBEC

By WILLIAM BOYMAN HOWELL, M.D.

MONTREAL, CANADA

ON the morning of the fourth of May 1639, a procession of carriages passed through the narrow streets of the little Norman town of Dieppe. Six nuns, escorted by a number of noble patronesses, were on their way to the harbor to embark for New France. The townspeople thronged the route, eager to catch a glimpse of the departing travellers and to bid them Godspeed. The perils of the voyage were well known to the people of Dieppe. Every year they saw ships limping back with hulls battered and masts and rigging broken by the fury of the North Atlantic; with gaunt crews who told how scurvy, dysentery and fevers had reduced their numbers. Every year some ship set sail for the banks of Newfoundland or for the fur-trading station at Tadousac, and when she rounded the neighboring headland, disappeared for ever. In the crowd of spectators more than one weather-beaten seaman, who had sailed as far as Quebec, must have wondered how gentlewomen, whose experience of life had been gained between the shelter of a wealthy parent's roof and the seclusion of a cloister, would fit into the life of the tiny settlement where France maintained a precarious foothold in the New World.

Of the six nuns, three belonged to the nursing order of Les Religieuses Hospitalières de la Misericorde de Jésus. They were leaving the ancient Hotel Dieu at Dieppe to found a new Hotel Dieu at Quebec. The venture had originated in the mind of the Duchess d'Aiguillon. This devout woman was not only providing money herself for the undertaking, but had obtained a grant from the French King through her uncle, Cardinal Richelieu. She had already secured land at Quebec for her hospital. The three women whom she was sending out were Mère de Saint Ignace, the Superior, Mère Anne Lecointre de Saint-Bernard, and Mère Marie Forestier de Saint Bonaventure. The eldest of them was twenty-nine and the youngest twenty-two. With them went a humble and fervent creature who was to act as their servant for ten years on the sole condition that at the end of that time she would be made a lay sister. Her name was Catherine Chevalier.

It is difficult for us in these matter-of-fact days to realize the intensity of the religious feeling which inspired these women. The civilized world was only beginning to realize that it is not the business of a government to torture and kill people because they do or do not accept certain dogmas. The monasteries and convents of Europe, however, were still full of men and women who were prepared to go to the stake for their religious beliefs. There was nothing half-hearted about their faith. They believed that Heaven was to be gained by self-sacrifice and suffering; opportunities for self-sacrifice and suffering therefore they sought with passionate eagerness. A joyful exaltation of spirit possessed these hospital nuns at the prospect of leaving their native land for ever and entering upon a life of hardships, danger and unremitting toil in a barbarous country. Out of such material are saints and martyrs made. But even saints and martyrs have moods when the spirit is less willing and the flesh weaker than usual. To have crossed the Atlantic in the 17th century without at times being "fed up" must have been impossible for any mere mortal, no matter how high the motives which inspired him or her. Passengers of even the toughest fibre were wont to have their fortitude strained to the breaking point by the discomforts of life at sea. The 17th century merchant ship carried her cargo low down in a hull which was short and stood high out of the water; an arrangement which ensured the greatest amount of rolling and pitching in response to the smallest amount of sea. There were no port holes; what light there was between decks came from lamps, whose disagreeable smell added something, though probably not much, to the sickening stench of the bilge. The only ventilation was by means of the hatchways, and in times of storm these had to be kept partly or completely closed. The food was, at the best, unappetizing; at the worst, revolting. Lescarbot says:

---

* Read before the members of the Montreal Medico-chirurgical Society, May 15, 1931.

> The mariners then and passengers do suffer discommodity as well in the bread as in the meat and drink; the biscuit becometh dampish and rotten, and the waters stinking.

In a voyage which might last for months there would be no using of fresh water for washing purposes.

On that May morning of 1639 the weather was fine and the wind favorable when the Dieppe fleet set sail for New France. The women passengers were on board the little flagship *St. Joseph*. For all their high purpose they would have been less than human if they had not felt some sinking of heart as they watched the shores of their native land receding from their view. Scarcely had the fleet gained the open sea than the direction of the wind changed, a gale sprang up and it became necessary to turn back. The *St. Joseph* anchored in a roadstead exposed to the waves, where for fifteen days she rolled and pitched, while her passengers had their initiation into the miseries of sea-sickness and the dirt and discomfort of life on board a ship.

When the weather changed another start was made. There was war at the time between France and Spain. The little fleet sighted a squadron of Spanish men-o'-war in the channel and only escaped after a prolonged chase. There were gales in the Atlantic when the nuns had to spend interminable days and nights below deck, less terrified perhaps by the frantic movements of the ships than by the rats and cockroaches which infested their foul little cabins. One day, in a dense fog, a great iceberg loomed up suddenly ahead of the *St. Joseph;* and as she swung round she came within only a few feet of destruction. There was fog again in the Gulf of St. Lawrence, and the ships had to grope their way with only the most primitive charts to show the course; finally after two and a half months they anchored at Tadousac.

Twelve days later the voyage was resumed on board another and much smaller vessel. Four days were spent in tacking along the beautiful north shore of the St. Lawrence. When evening came, and the breeze faded away, the nuns went ashore to spend the night sleeping under the trees. One would like to think that they were careless and happy during their interlude between the miseries of the voyage across the Atlantic, and the grim realities of life in Quebec, but—there is no reason to think that they had mosquito netting with them.

Quebec was *en fête* to celebrate their arrival. The governor of New France, M. de Montmagny, sent his state barge decorated with flags to meet them, and as they stepped ashore bade them welcome. The soldiers fired a salute with cannon, swivel guns and even muskets. The citizens formed a procession and conducted the new comers through the little settlement to the upper level where stood the church of Notre Dame de la Recouvrance. There the nuns gave thanks to God for their safe arrival. The Company of the Hundred Associates had placed at their disposal a six-roomed house in the upper level close to Fort St. Louis. It contained no furniture except two benches and a table, the top of which was a single plank. As their effects had not come ashore they obtained some fresh spruce boughs which, however, being covered with caterpillars, made very uninviting beds.

Shortly after their arrival the nuns went to look at the site which the Duchess d'Aiguillon had secured for them. They were bitterly disappointed. The approach was difficult, the ground rocky and uneven, and there were no springs. The distribution of the buildings was badly planned. Work had begun, but had not proceeded beyond the laying of the foundations. After some consideration the nuns decided to stop the work and abandon the situation.

Among the first tasks which they undertook after their arrival was the study of the Indian language. They had not long to wait for an opportunity to apply their knowledge, for that autumn an epidemic of malignant smallpox broke out among the Indians. Until the following spring the hospital was crowded with savages desperately ill, some of them raving in delirium, some waiting for death with sullen patience; all of them covered with loathsome sores and ulcers. The fetor due to the disease, to the filthy habits of the Indians and to the overcrowding, was little mitigated by ventilation, for the windows were kept tightly closed to exclude the bitter cold of the winter air. Houses in Canada at this time were heated by means of open fires, and sometimes by braziers; the temperature indoors was often below freezing point. It was before the days of stoves. Early in the epidemic the kitchen was converted into a ward, and birch-bark huts were erected around the hospital for the accommodation of more patients. The lower class of women in the town were too much afraid of infection to do the hospital washing, so the nuns had to do it themselves. All the water had to be carried by hand up the steep bank of the river as there was no cart in which to transport it. When the supply of material for bandages and dressings gave out the nuns cut up their own linen, even sacrificing their veils. There were times when the nuns were ill with fatigue and could do no more. The Jesuit fathers came in then and looked after the Indians.

The physician to the hospital at this time was Robert Giffard, Seigneur of Beauport. He was the only physician in Quebec.

When the epidemic subsided several families of Indians continued to occupy the huts which had been built around the hospital. The nuns took care of them and fed them out of their scanty resources and such supplies as they were able to borrow from the Company of the Hundred Associates. When the season for hunting moose came, the able-bodied Indians vanished into the forest, leaving with the nuns the aged and feeble of their tribe; in fact all who would not be able to keep up with them in their journeys, and would therefore have had to be killed.

Thereafter there was some respite for the nuns. Their resources, however, were so exhausted that when Mère St. Ignace became seriously ill she had to be nursed back to health on a diet of peas and rice cooked in water. Her ailment was one which occurs with painful frequency in the annals of the community of the Hotel Dieu—cough and spitting of blood.

In the following July two more nuns arrived from Dieppe after a long voyage during which they had seen three of the ships of their little fleet founder with all hands.

In June 1640 the nuns gave up their house in Quebec to the Jesuits whose residence had been burned down. Having come to the conclusion that their services were needed more by the Indians than by the French, they moved to Sillery, a settlement three miles from Quebec, inhabited by Algonquins and Montagnais Indians, with a Jesuit mission in its midst. While a hospital was being built for them they occupied a house with three rooms, one of which was used as a ward, one as a chapel, and one as a combination of kitchen, refectory and dormitory. At the beginning of the winter they moved into their new building, though it was by no means ready for them. The work had been done so hastily and unskillfully that everywhere between the boards of the floors and the logs which formed the walls were chinks which admitted the icy winds and the drifting snow.

The suffering of the nuns from cold was aggravated by hunger, for food was expensive and money scarce. It is not to be wondered at that three of them fell ill. One of these was Mère St. Ignace, whose cough and spitting of blood recurred. Another was Mère de Sainte Marie who had arrived from France the previous summer. Before the snow melted she was dead. Fortunately there was little nursing to do that winter, most of the Indians having left to go hunting. They returned in the spring and made presents of venisons to the nuns, who half-starved though they were, could hardly bring themselves to taste food received from such repulsively dirty givers.

When the number of sick Indians became so great that they could not all be taken into the hospital the nuns visited them in their lodges, the filth and confusion of which were a sore trial to the orderly minds of women who looked upon dirt in any form as an abomination. They soon found that the white robes of their order were unsuited to such surroundings and they dyed them grey. René Goupil acted as surgeon to the hospital during this time. He had been trained as a surgeon in France and had come out to Canada to devote his life to the benefit of the bodies and souls of the heathen.

Upon his arrival he bound himself to serve the Jesuits for life, without pay, as a *donné*. He died in the Huron country from the blow of a tomahawk after suffering unspeakable tortures.

At this time the Iroquois were becoming more and more bold in their attacks upon the French and upon the Algonquin and Huron Indians. Bands of warriors, fifty, a hundred or two hundred strong, were roaming about New France, massacring, scalping and carrying away prisoners for the purpose of torturing them. There was indeed an ingenuity and thoroughness in the way they went about the business of torturing which was almost civilized. Now and then news reached Sillery of plans to abduct the "white girls" as they called the nuns. When the danger of an attack seemed imminent the Indians of Sillery removed their huts from the neighborhood of the Jesuit mission and erected them around the walls of the hospital, thinking it an easier place to defend because the grounds were surrounded by a wall. The danger to the nuns consequent upon the isolated position of their hospital became a cause of great anxiety to the authorities in Quebec and to the Jesuits.

One day two Jesuit missionaries came to visit them and to warn them of their danger. One was the gentle scholarly Isaac Jogues, the other Jean de Breboeuf, a scion of a noble family of Normandy, a lion of a man in strength and courage. Much as they differed outwardly they were alike in this, that each knew in his heart that he would, sooner or later, fall into the hands of the Iroquois to be tortured and murdered, and both were right. There was a long conference. The two men spoke of the probability that Sillery would have to be abandoned. It was a grievous blow to the nuns who had spent so much of their little capital in building their hospital and now it might all be lost. Finally they agreed to resume building on their land in Quebec.

Jogues, as he said good-bye to the Mother Superior, asked for the prayers of the community. He was starting off again for the Huron mission a thousand miles away. Within a few days he was a prisoner in the hands of the Iroquois and was being tortured. Part of the skull of Breboeuf is to this day a treasured relic in the possession of the community of the Hotel Dieu.

It was not till 1644 that the Iroquois came close to Quebec. One day in the month of May news was received that a war party had attacked the settlement at Cap Rouge, and was on its way to Sillery. M. de Montmagny sent a messenger to the nuns ordering them to come at once to Quebec. Their answer was characteristic. They could not, they said, leave their patients. They asked to be allowed to stay and share their fate. The governor did not insist. Instead he sent six soldiers, all he could spare from his little garrison. The Indians at Sillery had built around the hospital, houses like those of the French. When the attack came it was hoped that the settlement would be able to hold out until help arrived from Quebec. The edge of the forest was only a stone's throw away; an enemy could move among the big trees as silently as a shadow, for at that time there was no undergrowth. By climbing one of the trees on the rising ground behind the village he could see what was going on behind the palisades, and with his musket pick off anyone who went outside a house. When night fell, anxiety increased and an even sharper look-out was kept. Day after day and night after night went by in momentary expectation of the sound of the war-whoop. Vigilance was relaxed a little; and a party of French and Algonquins, moving through the forest in the neighborhood fell into an ambush and were nearly all killed or taken prisoners.

This disaster had a demoralizing effect on the Indians left in Sillery. They promptly decamped, leaving the nuns and the few other white people to look after themselves. "The still small voice" of gratitude was still indeed. M. de Montmagny himself now came to urge the nuns to return to Quebec. He told them that their services were urgently needed among their countrymen and offered to lend them a house. The departure of the Indians from Sillery having removed the chief reason for staying there, they consented to comply with the wishes of the governor. They left on May 29, 1644.

The bad luck which had attended their fortunes ever since they left France, and did so for long afterwards, was particularly striking on this occasion. They embarked with their effects in a large open boat, but a high wind drove them past Quebec without giving them an opportunity to land. They finally reached the shore at Beaupré and had to walk back six miles to Quebec. Late in the evening they arrived, tired out, at the building which the governor had offered to them, and found that it was nothing more than a dilapidated hut full of frogs. It was long before they could bring themselves to lie down on the ground and sleep.

The construction of the new hospital was proceeding slowly. The walls were not completed. In order to hurry on the work these indomitable women worked as navvies. They collected stone, loaded and pushed wheel barrows; they turned the handles of the windlasses; they cooked for the workmen; they helped to clear the ground around the hospital of trees lest these might afford cover to attacking Iroquois. During this time a small house in the neighborhood was used for the French patients. The sick Indians were nursed in huts which the nuns allowed them to put up in the courtyard of the unfinished hospital. For several years after the hospital was opened these huts contained families of Algonquins and Huron Indians who were prevented from going into the forest to hunt by fear of the Iroquois, and would have starved but for the charity of the nuns. The new hospital was opened for patients in 1646. To their great satisfaction the nuns were then able to resume the white robe of their order.

Existence in Quebec was full of peril, hardships and deprivations; the whole colony was in constant danger of extermination by the Iroquois; the people were desperately poor and could afford to import only the barest necessities of life. The furs which constituted the principal commodity of trade enriched France, but brought little money to Canada. Food was scarce and expensive. The cold in winter was the cause of much suffering. It was only by keeping a fire constantly blazing on the hearth that the houses were kept habitable by day; at night when the fire went out the temperature indoors fell to that of the outside air. By morning the water in a bucket was frozen solid; and foodstuffs, such as meat, fish and bread were of stony hardness. LaJeune, the Jesuit missionary, complained that though he sat before a blazing fire in the mission house at Quebec, his efforts to learn the Algonquin language were constantly impeded by the freezing of his ink. From November to May the colony was cut off from all communication with the world.

When navigation opened, ships arrived with letters from friends and relatives in France, letters which were read over and over again. In the same ships were men ill with infectious diseases which spread all over New France and sometimes far beyond, even to the Pacific coast. It was the white man's diseases and his brandy more than his ingenuity in inventing weapons to kill his fellow creatures, that conquered the Indians, and cleared the path for the advance of civilization. During the 17th and 18th centuries there were few summers without an epidemic of smallpox, typhus, typhoid, plague, influenza or measles.

As Quebec grew, demands upon the Hotel Dieu became greater. There was a steady increase in the amount of accommodation for patients. The nuns forming the community became more numerous. At first they were recruited from France, but in time Canadian gentlewomen aspired to join the order and were accepted. The first woman of Canadian birth to become a hospitalière was the daughter of Robert Giffard, who besides being a physician was Seigneur of Beauport. There was no lack of recruits though the only material inducements to become a member of the order were the certainty of a life of poverty and hard work and the probability of dying soon, of some infectious disease contracted from a patient.

The year 1660 was one of the most critical in the history of New France. The little colony was in greater danger than ever of extermination. The water ways were infested by bands of Iroquois on the lookout for opportunities to massacre the settlers, to carry them off into captivity, or to pillage and burn their habitations. The fate of the prisoners in the hands of the Iroquois is not a pleasant subject to dwell upon. Quebec was, to a certain extent, protected by Fort St. Louis and its little garrison. At night when the danger of an attack was greatest, the part of the town outside the fort was patrolled by soldiers. The situation of the Hotel Dieu made it particularly exposed to attack. At the earnest representations of the governor and the bishop of Quebec the nuns consented to take refuge at night in a building lent them by the Jesuit fathers. Three nuns, however, remained every night on duty at the hospital with a guard of soldiers. It was learned later from prisoners that it was the presence of this guard that prevented the Iroquois from trying to carry out their plan of abducting the nuns.

In 1661 there was a great earthquake in Canada. On February 3, while a carnival was going on in Quebec and the citizens were wholly given up to frivolity, the ground shook so violently that, according to Father Rageneau: "whole mountains were swallowed up, lakes disappeared and rivers changed their courses. Trees leaped into the air and resumed their places upside down. Walls tottered and roofs fell in." The nuns looked upon the earthquake as a divine warning to the people of Quebec to mend their ways. Indeed the ungodly seem to have had the same thought for they quickly filled the churches, in spite of the danger of more shocks and more falling-in of walls. The curious thing about the earthquake is that there was no loss of life. There is no record of any damage to the Hotel Dieu. One is tempted to believe that the severity of the earthquake was exaggerated.

The year 1665 was a busy one at the Hotel Dieu. This was partly owing to an increase in the number of settlers who came from France, and partly to the arrival of the regiment of Carignan-Salières with many of its personnel ill with what was described as "malignant fevers" and was probably typhus. When the second half of the regiment arrived one hundred and thirty sick soldiers were admitted to the hospital in one day. Of the fourteen nuns who constituted the community of the Hotel Dieu, seven contracted the disease.

The same year arrived Jean Talon, the intendant sent by Louis XIV to re-organize the affairs of the colony. One of his first acts, on arriving, was to pay a visit to the Hotel Dieu. He appreciated the importance of the work being done there and during his term of office did all he could to encourage it. Besides building a new pavilion and new wards he installed a laundry and arranged for an adequate water supply. The water was brought from a considerable distance through conduits of lead and wood. There was a tap put in the men's ward and one in the women's. One of the pipes, an iron one, passed through a chimney, so that warm, perhaps even hot water could be obtained day and night. If the nuns began now to pride themselves on having an up-to-date hospital they were not without some justification.

The wards of the Hotel Dieu were always full. To gain admission all that was necessary was to be poor and ill. Infectious cases lay side by side with non-infectious and the symptoms of both were, in winter, accentuated by scurvy and starvation. When one considers the state of medical and surgical practice in the 17th and 18th centuries, and the early part of the 19th, one is forced to the conclusion that the nuns, with their nursing, did a great deal more to cure the patients than the surgeons, physicians and apothecaries with their copious and repeated bleedings, their sweatings, their drastic purges, emetics and counter-irritants. Not that the nursing was by any means perfect. When the nuns had to choose between what was good for their patients' bodies and what was good for their souls, it was not the souls which suffered.

The incidents which relieved the lives of the nuns from monotony were all tragic; epidemics which took a toll of their lives, famines, wars and fires. Sudden hemorrhages from the lungs among those overworked, underfed women were pathetically frequent. For them tuberculosis had only one end.

There is a history of the Hotel Dieu written by one of the sisters, Françoise Juchereau, and published in 1751, which gives much interesting information about the pestilences which scourged the people of Quebec, and indeed of all New France. Of the first epidemic of typhus she says: "the last vessels of the season were infested with malignant and contagious diseases . . . almost the whole country was infected and the hospital filled with sick."* The people of Quebec were comparatively healthy in 1664 for "there were no diseases except those brought over over by the vessels of the King. There died about a hundred of those who disembarked." The year 1665 was distinctly unhealthy:

> There were so many sick in this ship that soon the wards, the chapel, the barns, the chicken run and all the hospital grounds, wherever a place could be found for them—even tents were put up in the yard—were filled. We redoubled our efforts to serve them and they had great need of our help—fevers, terrible and burning; delirium and much scurvy; the women's ward was filled with officers of quality. At the beginning twenty died—we took them in half dead.*

This epidemic was scurvy.

On October 10, 1690, the routine of the Hotel Dieu was suddenly interrupted. The nuns, their women servants and the men employed about the grounds were to be seen moving about in a state of feverish activity. They were hurriedly collecting whatever was valuable and moveable, and were loading it upon carts. In a quiet corner of the garden three or four nuns were furtively burying the church plate. News had arrived that a fleet of thirty-three ships, most of them transports carrying troops from the American colonies, was on its way up the St. Lawrence, under command of Sir William Phips, to attack Quebec. Count Frontenac, the governor, was away, and the town major, François Prevost, anticipating a bombardment, had given orders to the nuns to evacuate their hospital and go to Indian Lorette. In the midst of the preparations, the fiery old governor arrived from Montreal. He immediately sent word to the Hotel Dieu, asking the nuns to remain. He would want them, he knew, to look after his wounded when the fighting began, and he feared the effect of their departure at such a crisis upon the morale of the civil population. The tradition of unselfish devotion to the interests of others, built up by the community of the Hotel Dieu during the fifty years they had been in Canada, had given them an influence in Quebec which was too valuable to be dispensed with at such a time.

The bombardment began on the 17th of October. Many cannon balls fell in the hospital grounds. In one day no less than twenty-six were picked up. These were carried off to the French gunners to be fired back, for ammunition was scarce. None of the sisters was killed or wounded although there were some narrow escapes. Most of the male white population of Canada having been enrolled in the militia and concentrated at Quebec without an adequate supply of provisions, there was imminent danger of starvation. Hungry soldiers stationed around the Hotel Dieu received food from its scanty stores and repaid the nuns for their kindness by carrying off fire wood, vegetables and fruit which had been set aside for use during the coming winter. In addition, the military authorities requisitioned rafters and boards belonging to the hospital for strengthening the fortifications of the city. The nuns had good reason to be discouraged. They had been told that if the attack were maintained for more than a few days the town would have to capitulate to avoid starvation. They pictured to themselves the coming desecration of their most sacred possessions by ruffians whom they looked upon as enemies, not only of their race, but of their God and, half-starved though they were, set to work to prepare the hospital for a large number of wounded. However, Phips's attack was a failure, and on October 21st the people of Quebec looked down upon his squadron as it weighed anchor and sailed off towards the east.

---

* Quoted from Heagerty, J. J. Four Centuries of Medical History in Canada. Toronto, Macmillan, 1928.

During the last thirty years of the seventeenth century the physician to the Hotel Dieu was Timothée Rousel. It was he who decorated the front of his house with the carved "Chien d'or" which is now to be seen over the entrance of the Quebec Post Office. Rousel died of influenza during the epidemic of 1700.

One of the worst epidemics of smallpox during the French regime occurred in 1703. It was started by a solitary Indian who was sickening with the disease when he landed at Quebec from his birch-bark canoe. A kind-hearted citizen, seeing that he was ill, took pity upon him, brought him into his house and cared for him. Next day the Indian's skin was covered with the eruption of smallpox and soon afterwards he died. The disease in its most malignant form broke out in his benefactor's family and spread through the town, and then all over the country. Whole families were stricken at the same time. There were not enough priests in Quebec to minister to the dying and to read the burial service over the dead. Corpses were hurried to the churches and unceremoniously buried in pits which held from fifteen to twenty. Most of the nuns of the Hotel Dieu contracted the disease and five of them died. The ladies of Quebec volunteered to help, and, being inexperienced, were employed to look after the sick nuns. The nuns who were well gave their time and the benefit of their training and experience to the public patients.

There was an epidemic in 1710 of what is now believed to be yellow fever. It was known among the French as "maladie de Siam." That summer a ship, the *Belle Brune*, arrived at Quebec with a number of her crew ill with a fever. Several had died during the voyage. Surgeons from the Hotel Dieu had visited the ship and had satisfied themselves that the disease was not infectious. The sick sailors were taken to the hospital and the healthy ones allowed to mingle with the townspeople. In a short time the disease had become epidemic and spread through the country, causing a great many deaths. The Hotel Dieu was soon crowded. Twenty-four of the nuns fell ill and died. The chief symptoms of the disease were high fever, vomiting and delirium. It has been demonstrated that the *stegomyia*, the mosquito which communicates the disease, can be carried in the drinking and bilge-water of a ship. The *Belle Brune* arrived at Quebec during the hot weather when the mosquito would breed easily and infect the people of the town.

The country was ravaged by a "malignant fever" in 1718. In 1734 there was a severe epidemic of what Heagerty thinks was hemorrhagic smallpox. That year died Michel Sarrazin de l'Etang, after serving the Hotel Dieu faithfully for forty-five years as surgeon. He was one of the most gifted, and is the best known of the early doctors of Canada. He was a physician as well as a surgeon, a biologist and a botanist. His great reputation in New France was based partly on his success in treating pleurisy. His method consisted in alternately bleeding and sweating his patients.

In 1736 a "pestilential disease" decimated the inhabitants of Quebec: "The wards of the Hotel Dieu do not suffice to receive the sick and l'Hôpital General was obliged to open its doors to fifty sailors who suffered from this terrible affliction."*

In 1740 a ship, the *Rubis*, brought to Canada a disease which was supposed to be the plague. Two hundred and forty-one cases were admitted to the Hotel Dieu. Of these, twenty-five patients died. In view of the low mortality, Heagerty thinks that the disease may have been influenza. Mère Duplessis de Sainte Hélène wrote: "I have never seen so many patients here; the halls, the attics, the parlours, all are full, and we can hardly pass between the beds. All become black as negroes when they die."

By the middle of the 18th century the Hotel Dieu had become an institution of considerable importance in the colony. It was not only a civil hospital, but a naval and military one as well. The community of nuns had increased in number to fifty. In the summer of 1755 there was fighting between France and England in North America, though war had not been formally declared. There was a large garrison at Quebec and many of the French King's ships and merchantmen lay at anchor in the harbor. The hospital was at its busiest, when on June 7th it caught fire. The whole collection of buildings burned to the ground. One nun was killed and another escaped only with the greatest difficulty. At the same time were destroyed many important documents and interesting records, as well as a picture by Raphael. Long afterwards the nuns learned that two sailors, former patients, had set fire to the hospital in revenge for some fancied grievance against the Mother Superior.

Immediately after the fire the Jesuit fathers placed a wing of their building at the disposal of the nuns. The Bishop of Quebec, Mgr. de Pontbriand, lent them his palace to use as a hospital. By July 16, they announced that they were ready to receive patients again. They had two wards and these were quickly filled. Their difficulties in resuming their work were increased by an epidemic of smallpox. Eight of the nuns fell ill and one died.

The nuns were now in a state of great perplexity. Their advisors were against re-building; the future was uncertain; on account of the war labor was scarce and expensive; if the city were captured it would be the English who would obtain all the benefit. The nuns, after long and careful consideration, decided to rebuild. The Bishop of Quebec asked for subscriptions from the citizens and the crews of the King's ships. He collected more than 1300 crowns, a large sum for the time. M. de Vaudreuil obtained money from France and himself subscribed 500 francs. He also sent twelve men to work on the new building.

In the summer of 1756 the French frigate *Léopard*, carrying troops from France, arrived at Quebec with plague raging on board. The sick soldiers and sailors were sent to the temporary Hotel Dieu in such numbers that the nuns found themselves obliged to turn their dormitory and common room into wards, and to occupy a cloister, which was too small either for comfort or health. The epidemic robbed the hospital of its physician, Jean François Gaulthier, a man of some mark in the scientific world, an authority on meteorology, natural history and botany. The plant, *Gaultheria procumbens*, was named after him. In August the work lightened and the nuns set themselves to hurry on the erection of their new buildings. They carried building material about as had their predecessors in 1644; they painted wood work and put the glass in the windows; no work came amiss to them. They did this in addition to their ordinary work, on the scantiest of half-rations. It was a time of dearth in Canada. The adult *habitants* had been called to the colors, leaving no one to till their fields. Bread was scarce and the price of it exorbitant.

---

* Heagerty. Four Centuries of Medicine in Canada, vol. 2.

The hospitalières moved into their new buildings on August 1, 1757. They had hardly got settled when there was a great influx of typhus patients. One day they received no less than eighty-four. In the space of three months they had 97 deaths. As usual the community of nuns paid toll for the privilege of looking after fever patients. Twenty-two became ill and five died.

In the summer of 1759 Admiral Saunders's naval guns and Wolfe's bombardment at Point Levis pounded Quebec for two months. The Hotel Dieu, being in an exposed position, had to be vacated at the beginning of the bombardment. The sisters took refuge at l'Hôpital Général, leaving five of their number to act as caretakers. This hospital is situated on the right bank of the St. Charles River, and was at that time three-quarters of a mile outside the city. It was crowded with sick and wounded French soldiers and with refugees from the town. Barns, stables, outhouses, and garrets were occupied. The nuns from the Hotel Dieu helped to look after the patients. From the upper windows of the main building they were able to see the Battle of the Heights of Abraham.

After Quebec had capitulated and the British army had taken possession, the sisters returned to the Hotel Dieu. Twelve of the community, however, remained temporarily at l'Hôpital Général to help in the work of looking after the wounded. It was a sad homecoming. In the streets the appearance of the citizens, dejected and famine-stricken, contrasted painfully with that of the cheerful British soldiers. The walls of the hospital had been pierced by projectiles, some of which had exploded inside. The courtyards and garden were furrowed by cannon balls. The trees in the orchard had been broken down. The cattle had all disappeared, requisitioned to supply food for the soldiers. The only incident which mitigated the sadness of the return home was finding that the five sisters who had been left in charge were unharmed.

The serious state of their affairs now obliged the nuns to apply for help to General Murray, the military governor. His response to their application was courteous and humane. For several months he supplied them with provisions; no easy matter when food was so scarce that soldiers and civilians alike were half-starved.

The quality of the soldiers' food may be judged from the fact that there were 685 of them died from scurvy in the course of the winter. The problem of finding billets for 5000 soldiers in a city which was mostly in ruins compelled the military authorities to quarter several companies at the Hotel Dieu. Of the space available for patients only a small part was left at the disposal of the sisters for their ordinary patients; the rest was used for sick and wounded British soldiers. One of the British officers wrote of the hospital:

> Each patient has his bed with curtains, allotted to him. Every sick or wounded officer has an apartment to himself, and is attended by one of these religious sisters, who in general are young, handsome, courteous, rigidly reserved and very respectful. Their office of nursing the sick furnishes them with opportunities of taking great liberties if they are so disposed; but I never heard of any of them charged with levity. [Heagerty.]

The distress of the nuns during the winter of 1759–60 was aggravated by the death of two of their number. One of these was the old Mother Superior, a woman whose character had aroused such esteem and interest in the mind of General Murray, that when he heard of her illness he sent one of the best of his army physicians to attend her.

Next spring there was war again. At the Battle of St. Foye the British sustained heavy losses and were obliged to retreat into the town. For a month the French besieged the city. Both sides realized that the fate of Quebec, even of Canada, depended on whether French or English ships would be the first to appear in the river. On May 9, the nuns looked down upon the river and saw a man-of-war approaching with her decks cleared for action. They waited in an agony of suspense to see what colors she would display. As she came to anchor she raised the Union Jack. After peace was signed between France and England, the Duchess d'Aiguillon, grandniece of the foundress of the Hotel Dieu, wrote to William Pitt, then Prime Minister, describing the plight of the hospital and of the nuns, and implored his help. The following is a translation of his reply:

> Mr. Pitt is flattered by her Grace the Duchess of Aiguillon's expression of goodwill. He considers himself fortunate in being able to help in a matter which, besides having a claim on his humanity, gives him the privilege of carrying out her commands. As regards the Hotel Dieu of Quebec he has the satisfaction of being able to assure her that the nuns have been treated with the respect which is so eminently their due, and that they receive from our officers every consideration that pity for their misfortunes and gratitude for their kindness to our sick and wounded, can suggest.

Pitt also wrote to General Murray directing him to do all he could to help the sisters. Murray was able to remit certain taxes and to help them financially in other ways.

The affairs of the Hotel Dieu were at a low ebb. On March 26, 1762, the sisters held a meeting to consider what was to be done. They owed 107,185 francs, a sum which must have seemed to them colossal. They had no provisions left; flour, meat, vegetables, all had been consumed. They had not even firewood. There were no prospects of replenishing their stores. Their creditors were pressing them. The situation seemed hopeless, but there was no thought of abandoning the struggle, for the hospitalières never knew when they were beaten. They sold the silver belonging to the community and raised 680 francs. Half of this sum went as a sop to their most urgent creditors, one of them a butcher. Next they sold their great clock; this brought in 192 francs. Later they sold some of their land. They earned money by taking in washing for churches, by baking bread for the Seminary, and by letting rooms to boarders.

In 1775 war came again to Quebec. Two forces from the revolted American colonies combined and bombarded the city during the month of December. On January 1st they attempted to take it by assault but met with defeat. Montgomery was killed and Arnold wounded. The siege went on during the rest of the winter but came precipitately to an end with the arrival of large re-enforcements from England. This affair brought home to the English government the importance of Quebec as a fortress, and the building of fortifications and barracks was begun.

It was not until 1784 that the nuns were relieved of the presence of troops billeted upon them. They then opened two wards, one of ten beds for men, the other of eight for women. The work of the hospital increased steadily though the struggle for means to finance it continued for many years. By 1816 the wards had become so crowded that sick people had to be turned away from its doors. The nuns, though they had only $4800 on hand, laid the foundations of a larger building. This was partly paid for by public subscriptions and partly by the government. So slowly did the work proceed that it was not finished until the autumn of 1825.

The Hotel Dieu played its part during the many epidemics of the the nineteenth century. Like the other Quebec hospitals it was crowded to excess in the great cholera epidemics of 1832 and 1834; and in the lesser ones of 1849, '51, and '54. Typhus filled its beds in the great epidemic of 1849, and influenza in 1826, '30, and '89.

As the wealth of Canada has increased during the last 100 years, so have the affairs of the Hotel Dieu steadily become more prosperous. The little log cabin of 1639 has become the great teaching hospital of 1932; a living memorial to the courage and devotion of the women who have carried on the work from generation to generation during nearly three centuries.

There is one incident connected with the Hotel Dieu which deserves to be recorded, if for no other reason than that it provides a pleasant relief to the uniform sombreness of that institution's story. In 1837, the year of the so-called "rebellion," the political unrest in the province after the fighting at St. Eustache, made it necessary to keep the garrison at Quebec in readiness for a sudden outbreak.

> One dark and gloomy morning, about an hour before daybreak, three alarm guns were fired from the artillery bastion, which were answered from the citadel, according to the previous arrangements. The garrison turned out instantly—the volunteers mustered and repaired to the alarm posts—the bombardiers stood to their guns—the guards at the different gates listened for the approaching enemy—mounted officers repaired to the commandant for orders—and everybody longed for daylight. Day at length broke, but no enemy appeared; and it turned out that all this pother arose from the servants of the Hotel Dieu having set fire to some straw to scald a pig.*

---

* Henry, W. Trifles from my Portfolio. Quebec, Neilson, 1839.

THE FIRST CHOLERA EPIDEMIC IN COLUMBUS, OHIO (1833)*

By JONATHAN FORMAN, M.D.

COLUMBUS, OHIO

THE epidemic of Asiatic cholera which swept over our City one hundred years ago this summer, for its mortality and terror, surpassed any pestilence that ever afflicted Columbus before or since.

Cholera, because of its sudden appearance, its high mortality, and the frightful appearance of its dead, has always been a dramatic character in the history of the human race. Those who die of this disease are a gruesome sight. It attacks the bowels and causes a stupendous loss of body fluids in the typical "rice-water stools." The whole body becomes covered with dank moisture. Cheeks become hollow, nose pinched, eyes sunken, voice husky. Death's rigor sets in quickly. Muscles literally become as hard as a board. Sometimes a stiffening corpse jerks about; it may kick out a foot, wave an arm, flap its jaws or roll its eyes. Of such things is the natural terror of man for this loathsome disease.

Asiatic cholera has always been epidemic in certain parts of India and is probably indigenous in that country. The filthy habits of the natives, their poverty, their crowded conditions, and peculiar religious customs, are all aids in spreading the disease. The pilgrimages and great festivals of the Hindus and Moslems, by bringing together enormous crowds under the worst of sanitary conditions, always caused a rapid increase in the number of cases and facilitated the distribution along the accepted lines of travel. While cholera has been indigenous to the Orient and has existed there, both as a separate and epidemic affliction, for centuries, in the Western World it has made brief visitations solely as an epidemic.

An epidemic began on the low wet country, embracing the outlets of the Ganges in Bengal in Midsummer, 1817. It spread over India and recurred each season. In 1826, it came with great violence and spread slowly along the lines of travel, reaching Persia in 1829. There it went by way of Astrakhan to Russia, Sweden and Northern Europe.

Cholera first appeared in Paris about the 27th of March, 1832:

> Its increase was most rapid, the deaths shortly amounting to hundreds a day; on the 9th of April, 861 by the printed report. It was even said that many more died than were reported. By one account there were 20,000 deaths before the 23rd of April. Probably this was an exaggeration.

The cholera also extended to Dublin and Cork in Ireland, about the middle of April. In London it had nearly disappeared at the end of April and so also in Scotland. The whole number of cases reported in London was about 2,500, of whom rather more than half had died.

The inhabitants of the Western World were apprehensive about the coming of cholera from Europe. The medical authorities in Canada, under Dr. Skey, counseled the government to meet the pestilence. The Director-General of this Medical Department, Sir James McGregor, issued an order to his officers, early in 1832, and they were prepared for an outbreak of the disease. In February, 1832, at a meeting of the Councillors of the Massachusetts Medical Society, a committee of distinguished physicians was appointed "to investigate the history of this disease and especially to ascertain the best method of treating it."

---

* Read before The Columbus Society for the Study of Local Medical History at their March Meeting, 1933. A part of the expense of the preparation of this paper was defrayed by the Phi Rho Sigma Medical Fraternity.

The Canadians awaited with gloomy forebodings the arrival of the first ships in the spring. These forebodings were increased by a great deal of rain and generally unhealthy weather throughout the spring.

On June 7th, the ship *Voyageur* left quarantine at Grosse Island with a clean bill of health, touched at Quebec en route, but carried the dread disease. The next day the ship *Carrick* arrived at the port of Quebec from Dublin with 132 passengers, fifty-nine of whom had died of cholera during the passage. To make the whole matter worse, there were 30,000 Irish emigrants on their way to Canada.

By the fifteenth the disease and the alarm had become general. Many persons fled from the cities to the country. Quack remedies of all kinds were advertised. Benevolent societies were formed. Special services were held in all of the churches. The heat of the nights was sweltering and a sickly moonlight lay over all, adding another evil presence to the doomed city. From morning until evening, the fearful procession of the dead, buried in almost precipitant haste, passed through the silent streets, and from the churches there arose from time to time the sound of prayer, the wail of sorrow and the "Misere of Passionate Entreaty."

During the two months the epidemic lasted, 3851 of its victims died in Quebec (population 30,000). The hospitals in Quebec were filled to overflowing. Most of the patients, therefore, were left under canvas tents. The doctors went night and day for two weeks without undressing or getting more than a wink of sleep snatched now and then. Montreal, a city of about the same size as Quebec, suffered as badly, as did Kingston, Toronto, and the upper Canadian towns.

SPREAD OF CHOLERA IN THE UNITED STATES

The fear of the Indian had hardly subsided in Michigan when there came news of an enemy far more terrifying and deadly than the Indians ever were in American history—the Asiatic cholera. One of the last Acts of Legislative Council, approved June 29, 1832, was for the preservation of the public health in the city. Behind this fortification, Detroit waited for the coming of the cholera.

President Andrew Jackson at this time had become impatient over the slow progress in the effort to terminate Indian troubles on the western frontier. He ordered General Scott to take the matter in hand and the second detachment of his command under Colonel Twiggs arrived from Buffalo at Detroit on the fourth day of July, 1832, as the people were celebrating the birth of the Nation, a celebration that was to be followed by panic and consternation. As the *Henry Clay* lay moored to the wharf, 2 cases of cholera developed among the troops it carried, one of which proved fatal before night. The ship's surgeon, terror-stricken, under the plea of illness repaired to a hotel, while two Detroit physicians, Dr. Randall S. Rice and Dr. John L. Whiting, went to the succor of the afflicted.

The *Henry Clay*, proceeding on her way, was compelled to land other stricken soldiers at Fort Gratiot. The Captain of the *Henry Clay* described conditions aboard his ship as

> . . . so violent and alarming that nothing like discipline could be observed. Everything in the way of subordination ceased . . . as soon as the steamer came to the dock each man sprang on shore . . . some fled to the fields, some to the woods, while others lay down in the streets and under the cover of the river bank, where most of them died unwept and alone.

Of the 850 men who left Buffalo in the early days of July not more than 200 were fit for the field and less than two weeks later the remnant was landed at Fort Dearborn.

The disease in Detroit soon spread among the city people. Up to the eighteenth of July, there were 58 cases and 28 deaths; the upper story of the Capitol building was used as a cholera hospital. The epidemic continued unabated but was "confined largely to the lower classes, swept off the intemperate and dissipated in large numbers."

The garrison at Fort Gratiot under Major Alexander Thompson was ordered to Chicago after the epidemic became general. No transport could be obtained so he determined to take the route by land. He marched from Detroit to Chicago and then to Rock Island. Here again the epidemic became violent and hundreds of brave men found an untimely grave on the banks of the Mississippi.

During the summer of 1832, cholera came to New York City. Bellevue Hospital admitted 2000 patients with the disease of whom 600 died.

When the cholera was beginning to make its appearance in New York, the brig *Amelia* sailed from New York for New Orleans. On board this ship was a young physician, Warren Stone, who was leaving Troy, New York, to settle in New Orleans. Four passengers had actually been allowed to come aboard suffering from Asiatic cholera. Dr. Stone had his hands full with 25 cases of the disease. The *Amelia* was wrecked on Folly Island. The disease was promptly carried to the mainland by wreckers while the passengers and crew were quarantined on the Island. The authorities placed Dr. Thomas Hunt of Charleston, South Carolina, in charge of the health affairs of the Island. Dr. Stone was his chief aid. When the crisis was over, Stone went to settle and practice in New Orleans. A few months later, Dr. Hunt established himself also in New Orleans. Here the two young men renewed their friendship and soon succeeded in getting five other physicians to associate themselves with them in founding the Medical College of Louisiana (1834).

Most of the towns and cities along the Ohio River were visited by this dreaded disease in May, June, and July; from Wheeling, Virginia, it spread into Ohio and visited at St. Blairsville, Mt. Pleasant, and other Eastern Ohio towns. In October it was very bad in Cincinnati.

Thus we have traced this epidemic from Bengal on the Ganges over Asia through Russia, across Europe to Ireland, thence to Quebec; from lower Canada to upper Canada; with the soldiers of the Black Hawk War to

Ft. Dearborn and Rock Island and so down the Mississippi; from New York down the coast to New Orleans, in fact all over the United States except Central Ohio. But for some reason it did not enter Columbus until the following summer. This is all the more remarkable when one considers the number of travelers which were entertained by the young capital of a state which was rapidly filling up with settlers.

COLUMBUS, OHIO, IN 1832–3

In order to present more clearly the picture of the first cholera epidemic in Columbus it is necessary to sketch in a background of the biographical, civic, economic, social conditions of the times.

Columbus from its incorporation in 1816 until 1834 was a borough. It boasted of "its excellent springs and fine running streams of water." The ground, heavy, with no drainage except that of the surface and the imprisoned water, had the sponge-like quality of retaining much of the water it received, and held more of it in solution with decaying vegetable matter. Columbus went on for many years with open ditches and no water works or sewage system. Each household derived its water supply from its own wells and all the forms of waste were disposed of in vaults and cesspools sunk in the same lot on which the well was located. The natural consequences of this system soon began to manifest themselves in the more closely built sections of the borough. The water of certain wells would become notably bad and their owners would be compelled to abandon them, but other wells nearby would be called upon to render double service thereby, until they too would deservedly fall under condemnation. It is surprising that persons of even ordinary intelligence should fail to recognize the danger that was certain to result from this double use of the freely permeable beds upon which Columbus was built. The two fundamental principles later invoked by the development of sanitary science were: "First, city wells are incompatible with public health and public safety and must everywhere be abandoned; second, wastes must not be allowed to be returned to the ground because a filth-ridden soil becomes a prolific source of general and specific disease."

In addition to the fine running streams of water through the borough, there were numerous marshes, quagmires and ponds. The principal morass, with its outlying swales and ponds, embraced the present sites of the Fourth Street (Central) markethouse, Trinity Church, and St. Joseph's Cathedral, crossed the line of Broad Street, and extended in a northeasterly direction to the neighborhood of Washington Avenue. So that near Broad and Grant was a considerable dry land; east of it was a quagmire. In this the village cows, seduced by its marsh grass, were frequently mired. That part of Broad Street which passed through the swamp was easily cut by the wheels of traffic and in wet weather was nigh impossible. To overcome this, the street had been corduroyed about 1820, from the site of the cathedral eastward, by citizens working out their road-tax.

At Broad Street, also, near Cleveland Avenue was a spring somewhat larger than the others which had been piped to the State House to provide its water supply.

Numerous springs near Spring Street formed a brook of clear water known as Doe Run. To this rivulet were two or three other branches extending through the ground now occupied by the railroads. Another, which had its origin in a copious spring near the present church of St. Patrick, coursed southwesterly to a point near Fourth Street, between Spring and Long Streets, then, by a sudden bend, changed its direction to Spring Street. Meandering through a wide and treacherous bog, usually called "Cattail Swamp," Doe Run was confluent on Spring Street with Lizard Creek, the waters of which were gathered from the springs of Broad Street morass and descended Third Street from a point near the Cathedral, after been joined by Doe Run. Lizard Creek crossed High Street at Spring by a fifteen foot depression rushed down a gulley twenty-five feet deep to the Scioto River. Of all of the bogs of the borough Cattail Swamp was the most treacherous and dangerous.

On East Broad Street, near Twentieth, lay Crookedwood Pond. A practical road was finally run through this slough by rolling logs into it.

Where the central market now stands was a pond. The brooks which descended Fourth and Main Streets poured indirectly into Peter's Run and turned the wheels of Conger's flouring mill which stood in the ravine back of what is now the old Hoster Brewery. The grounds of the Institution for the Deaf were originally swampy and overgrown with bushes of the wild blackberry. Duke's pond, a favorite skating place in winter, was at the junction of Third and Broad Streets, where now stands Trinity Church.

Following the real estate boom naturally attendant upon the opening of the new capital and the laying out of the borough by its proportions in 1816, there came a reaction with a period of great depression lasting from 1820 to 1825. The price of real estate greatly depreciated and business of all kinds was almost at a standstill, but after the crisis was passed in 1825, business revived, immigrants sought permanent homes in the new capital; new buildings were erected, some of them large and expensive, trade began to flourish, and real estate began to boom.

In the fall of 1831, the canal had been opened connecting Columbus with Cleveland, New York and the Eastern market. For thirty years the canals were the great controlling factor of increasing commerce, manufactures, and population. Certainly Cleveland and Columbus are deeply obligated to the Ohio Canal as a determining influence. The newly formed markets added 50 per cent to their prices. In one year 300,000 bushels of wheat were sold in Columbus for cash and 100,000 barrels of beef and pork were put up for shipment east. As soon as the canal began to carry out wheat it advanced from twenty-five cents to seventy-five cents and within a short time to one dollar and one dollar and twenty-five cents per bushel. At the opening of the Ohio Canal the following rates were announced to New York via Cleveland, the Welland Canal and Oswego: "Flour, per barrel, Columbus to Cleveland, sixty-seven cents including storage; from Cleveland to New York, one dollar and ten cents. Pork and other staples are canned at a proportionate rate for both weight and distance." On westbound freight, dry goods, etc., the rate was one dollar and eighty-eight and one-half cents per hundred pounds.

In 1831, the town consisted of 350 dwellings, fifteen general stores, four printing offices, one bank, a market house, four churches—(Presbyterian, Methodist, Lutheran and Episcopalian), five clergymen, ten lawyers, five regular physicians and a total population of 2434. Such was the capital of this state when the opening of the canal brought it into direct commercial connection with the East and imparted a fresh stimulus to its development. Consequently, several new additions to the town were laid out and sold and so many new families arrived that a portion of these were obliged to go away for the want of houses in which to live.

In 1833 over seventy coaches, all crowded, arrived at Columbus each week. Along with this flush of business, due in part to the building of the National Road and its tributary turnpikes, may be noted also a marked quickening of speed. In 1833 the mail from Washington City came to Wheeling in fifty-five hours and from Wheeling to Columbus in twenty-four hours. The mail time between Cincinnati and Wheeling via Columbus was forty-eight hours. Between Cleveland and Columbus via Mt. Vernon and Wooster the time was twenty-six hours.

It must be remembered, however; that travel and transportation at this time in and around Columbus was not to be taken lightly. When it rained High Street was a mud-hole. Mr. Isaac Appleton Jewett, the son of Dr. Moses Jewett, described his return from New England to Ohio in December, 1830, a condition which obtained for the most part until 1836 or later, as follows:

From Zanesville to Columbus, fifty-eight miles, we saw the wilderness in all gloominess and enjoyed self-constructed roads in all their terror. We felt as if carried back to the times of the early settlers. Our vehicle, which in the dialect of the country was called a *spanker*, was intended for four persons, and on this occasion was drawn by four strong horses at the rate of two miles per hour. What, with the happy recollections of the preceding day, the fearful anticipations of the future, the wintry wind driving through an open stage, the warnings of driver to be prepared for any and every hazard, the confessions of a timid fellow traveler, of horses frightened by the howling of the wolves, of stages overturned, of bones dislocated, and lives in *jeopardy*, all of which he had heard of and much of which he had seen; what with travelling the livelong night and arriving in Columbus just before daybreak, and there finding four of the hotels at which we applied not only full but *crowded*, as admittance for repose was out of the question; considering these facts, as well as the simple incidents that one of our company was ever shrinking with fear, another had stupefied his senses with strong drink, and another was so much given to profanity as to succeed every harsh movement of the *spanker* with a tremendous oath, and I think one may receiv full pardon for uttering the "groans of a traveller."

In the spring of 1833, one half a mile east of town, workmen were busy building the new school for the deaf. On the east bank of the Scioto, one half mile north of the city, the contractor with convict labor was busy erecting the Ohio Penitentiary on its present site. Although the new penitentiary was being built north of town the convicts were still housed in the old prison.

This institution was a brick building on Scioto Street, 60 by 80 feet on the ground and three stories high. The basement was used for cooking and eating. The first floor was the keeper's residence. The third story was divided into four dark and nine light cells. The prison yard was 100 feet square including the ground that the building stood on, and was enclosed by a stone wall from 15 to 18 feet high. In 1818 an additional brick building was built and the yard was enlarged to a total area of 160 by 400 feet. There were now fifty-four cells and five dark dungeons. W. W. Gault was the keeper at this time.

The winter of 1832–33 was unusually mild in central Ohio. On February 22, 1833, Mr. Isaac A. Jewett wrote:

> The winter still continues open and delightful. What a contrast to the two preceding! Never were there clearer skies nor milder breezes. The month of February has been one long May day. I will not say the birds have made their appearance but I have certainly seen the grass green in the fields.

Nevertheless March opened with a slight snowfall, which was closely followed by some of the coldest weather of the season. During this cold interval, four inches of snow lay upon the ground, making excellent sleighing. April and the first half of May were commonly dry but June was a month of copious and constant precipitation causing high water, and making the roads for a time almost impassable.

The news that came into Columbus during the summer of 1832 and the following winter about the ravages of cholera in the northern part of the State and along the Ohio River, coming along the National Road as far as St. Clairsville, made everyone in Columbus apprehensive as to what the summer of 1833 held in store for them. In the *Columbus Sentinel* for May 16, 1833, Mr. Summer Clark advertises under the heading "anti-cholera":

> CHLORIDE OF LIME AND CHLORIDE OF SODA
>
> The subscriber has just received and offers for sale 500 pounds of the Chloride of lime and 100 bottles of the Chloride of soda. Directions accompanying each. Bottle of the Chloride of soda "To prevent infection from cholera morbus, small-pox, yellow fever, typhus fever, to purify the apartment of the sick etc. . . . sprinkle the floor . . . solution one part of the chloride to sixty parts of water. . . . To disinfect sewers, cesspools, privies —dilute with 40 parts of water to 1 of chloride.

There is another advertisement which shows with what apprehension the citizens of Columbus awaited the coming of the summer and the dread cholera. During the late spring and early summer N. L. Whiting, the bookseller, caused to be inserted in all of the local papers a list of nearly a dozen medical books which he had placed in his stock. These items included the report of the Massachusetts Committee and the other recent works on epidemic cholera.

No better illustration of the feeling on this matter exists than a letter to the Editor of the *Columbus Sentinel* which was printed in the issue of Thursday, June 6, 1833, signed "prevention." The letter follows:

> Mr. Editor: Last summer, the alarm which the cholera, everywhere in the west, occasioned, induced the police authorities of towns to take measures to guard against its attacks and mitigate its severity in the event of its being taken. This was highly commendable, receiving the approbation of all. Here, the Town Council and their good Marshall acted

with becoming spirit. Our streets and other places were cleaned, and we were mercifully spared. Now when the same dreadful malady is making its ravages at no great distance from us, not one precautionary step is taken. We actually seem to invite the enemy—to challenge him to combat. Is it wise to neglect the great, indeed, paramount duty of our safety? For one, I say, no. Can we rely with confidence upon the remedies which some may presumptuously pronounce infallible! For one, I say no. Should the destroyer come, which is fearfully probable, we may witness scenes of suffering and mortality appalling to the stoutest heart.

What is become of the board of health? Has their authority expired with the apprehension of danger? Cannot they, as men, invoke the authorities to act?

The filthy condition of Columbus in 1833 was a subject of many such remarks. So it must have been factors outside of the city which determined that cholera should be slow in making its appearance. The streets abounded in "chuckholes"; ponds of stagnant water stood on the commons, primitive swamps remained yet undrained, ashes, shavings and trash of all kinds were tossed promiscuously into the first alley or other convenient space, pigs and "other foul creatures" were permitted to roam at will, and the carcasses of the dead animals were left rotting in the sun. To correct these evils and to prepare for the coming of Asiatic cholera, a Board of Health was appointed June 7, 1833 of which the following prominent citizens were members: Drs. Peley Sisson, M. B. Wright, Hon. J. Campbell, Joel Buttles, John Patterson, William Munick, Alfred Kelley, P. B. Wilcox, R. Brotherton, Christian Heyl, George Jeffries and John Noble. The sum of fifty dollars was placed at the disposal of this Board by the Borough Council, which also appointed a committee of three of its members to procure a suitable place for a hospital if needed. That it would be needed, and that badly, soon became evident enough.

Meanwhile the street committee was directed to drain the ponds, fill up the holes containing water, and have the vile street culverts cleaned.

One manifest effect of the cholera, if no other, was to stir the easy-going villagers to open their choked-up gutters and culverts, drain their stagnant pools, and remove the rotting garbage heaps which gorged their neglected alleys.

As the summer came on the local papers were filled with reports of cholera in other places and lists of prominent citizens throughout the country who had been carried off by it were published in every issue. For instance in the *Columbus Sentinel* for June 13, 1833, we read:

> The first cholera news for the year began to appear: from the *Zanesville Gazette*, Wheeling W. Va. from the 16th of May until the 4th of June had 142 cases with 72 deaths: . . . Bridgeport had 30 cases with 18 deaths.

Again in the same newspaper in the issue of June 20 we find the following editorial:

> Still have we to regret that the fatal and mysterious scourge is the subject which absorbs the attention, and engrosses and alarms the minds of all, and still while we enjoy the blessing of being able to record the continued health of our town, it is our painful duty to state, that elsewhere the pestilence appears to be on the increase.

In this issue of June 27 we read that "Drs. Leavel and Moberly of Wilmington, Ohio, went to Lexington to witness the effect of the disease." There follows an abstract of their report from the *Wilmington Democrat and Herald.* It is to be remembered that Lexington, Kentucky, was still a great medical center. These Ohio physicians had really traveled to this center to learn from the great professors Dudley and Short how to treat the cholera.

This same issue of the *Sentinel* contains long lists of persons living along the Ohio River who had recently died of the cholera.

An extract from the letter of H. Leavel appears as follows:

> In every case whether fully developed or not, Professors Dudley and Short give ipecac in teaspoonful doses every ten minutes until free vomiting takes place and then they give large quantities of salt and warm water until they vomit six or eight times or until the extremities become warm and profuse perspiration is produced. During this time rubbing the extremities either with the hand or with pepper or mustard is also resorted to for the purpose of aiding the aforementioned remedies to produce an equilibrium in the circulation. After vomiting ceases the stomach is tranquilized and perspiration is kept up by warm clothing. Calomel in 10, 15, 20, 30 or 40 grain doses is then administered every two or three hours until dark and consistent evacuations are established. If calomel is disposed to pass off and produce thin, watery evacuations, laudanum is given to retain it on the stomach to produce its specific effect: dark billious evacuations. After these objects are effected, the pulse of the patient becomes slow and full and gentle moisture of the whole surface is maintained by keeping on large quantities of bed clothing.
>
> I have now given you a succinct account of the treatment up to the establishment of healthy secretion; after that, the treatment of billiary diseases generally restores the patient speedily to health. In speaking of the use of ipecac and salt I have omitted to observe that, in the general, they only cleanse the stomach, check the dysentery and cure the spasm, without inciting, in the general, the least degree of billiary secretion.

Extract from the letter of Thomas S. Moberly:

> The most successful practice in my opinion is the following: In the incipient stages of the disease which are usually indicated by nausea at the stomach and diarrhea, go to bed, keep warm and take ipecac and calomel combined in the usual quantities. Repeat it every two or three hours until free billious evacuations are produced. If vomiting and spasms ensue, puke the patient with teaspoonful doses of ipecac followed by large draughts of salt and water which must be continued until the spasms are relieved and the surface becomes warm and moist, when calomel should be given in large doses, repeated every two or three hours until free billious evacuations are produced. If the calomel is puked up continue it with laudanum or opium. The same quantity of pulverized mustard will answer as a substitute for ipecac. All vegetable diet should be avoided.

In spite of the fact that many people were constantly coming into Columbus from infected towns by stage coach and canal boat, it was not until the second week in July, 1833 that cholera made its appearance in Columbus, although for some weeks before it had raged along the canal in Madison township.

Bareis tells this story of the first attack of cholera in Franklin County at what is now Groveport:

> In the latter part of June 1833, a man traveling by canal boat from Cleveland, stopped off at the road crossing the canal

about a mile and one-half west of Canal Winchester, and went to the residence of a Mr. Woodstock who lived nearby at the toll-gate on the Columbus and Winchester Pike and at his request Mrs. Woodstock did some washing for him, and it is supposed that the clothes were infected with cholera. Mr. Woodstock went to Georges' creek to fish while his wife did the washing; soon afterwards he returned and drank freely of buttermilk. In a very short time afterwards he took violently sick, his family and near neighbors thinking from the effect of the buttermilk. At that time this was one of the most thickly settled neighborhoods in the township, and of course everybody was always ready to lend a helping hand when they had to depend on each other. It was not long until nearly the whole neighborhood had gathered to lend what assistance they might, none dreaming of the dread pestilence so soon to enter their homes. Mr. Woodstock soon died and only a few hours afterwards his wife died also. Dr. Wiley expressed the opinion that they had died of cholera. Nearly all present thought it precautionary to leave at once, and suited their action to their feelings. But it was too late. Within the next few weeks some thirty or more persons died in this neighborhood alone. Nearly all died in a few hours after being attacked.

The disease in Madison township was confined to a small area but proved very fatal.

The first case was that of a Negro woman dwelling in a cabin on the east side of Front Street, about 80 feet south of Broad Street. Next a white woman was seized in a stone house which stood on the northwest corner of Town and Fourth Streets. The first pestilence is said to have appeared on July 12, 1833.

During the week, ending July 20, two fatal cases occurred. Josiah Stagg was attacked on Sunday morning soon after he had eaten his breakfast, and died six or eight hours later. Mrs. McHenry was taken ill about ten o'clock on Monday morning and expired in the evening of the following day. "There is no cause for alarm," soothingly remarked the *State Journal* but many people took the alarm, nevertheless, and fled to Delaware, Mount Vernon, and other neighboring towns, where several of the fugitives were very soon afterwards attacked, some of them fatally. The patients were treated mainly with calomel, the stock preparation of that period, and those who convalesced usually suffered from its effects for a long time afterwards.

In many instances, death came quickly before much could be done for the afflicted. One case is well authenticated and has been verified by Dr. Dickson L. Moore, in his talks with the old residents who were living when he first began to practice in Columbus. The case is that of Miss Howard, a beautiful girl about twenty years of age, the daughter of a Dr. Howard. She was engaged to marry Dr. M. B. Wright. At noon of one summer day in this memorable year, Miss Howard was in her usual health, and met her friends and talked to them at "the pump" which was a place for common meeting and the drawing of fresh water on South High Street near Main. At two o'clock in the afternoon she was seized with the cholera and at four o'clock that same day she was dead. Before evening had come her friends had laid her away in the old North burying ground, near where the North Market-house stands. At dinner that day she had waited upon Edwin M. Stanton, who was then a young student of law. When he returned for supper and heard the news of her death, he was so shocked that he refused to believe it, and summoning a few comrades and fellow students, they repaired to the graveyard, where they actually dug up the body of the unfortunate girl in order to verify the awful truth of her sudden death.

TREATMENT

The treatment of Asiatic cholera as practiced by our profession one hundred years ago can best be set forth by copying from the report of the Massachusetts Committee:

> We proceed to point out more distinctly the exact method to be pursued, and to state the value of the different remedies so far as we are able to estimate them, in the different forms and circumstances of the disease. In thus doing we shall point out the course which is sanctioned by experience. But we shall not think it necessary to discuss every remedy which has been proposed and urged upon the public.
>
> At the first seizure the patient should be placed in bed, and subjected to strong friction, while remedies are prepared. Articles should be employed to communicate heat to the surface and it is better that these should be dry than moist. Bags containing hot sand, ashes, salt, meal or any convenient articles at hand, should be applied to the limbs and to the sides of the body. Bottles of hot water may be employed in the same way, especially at the feet. Mustard poultices should be applied to the pit of the stomach, and extended over the abdomen. They may also be put on the feet, and any other part which is peculiarly cold, or painful. A stimulating liniment may be used for rubbing the surface, as soon as it can be procured. This may be prepared as follows, or varied in the proportions according to circumstances.
>
> ℞
> Pulv. Camphor
> Ag. Ammoniae
> Ol. Oliv
> Ol. Terebinth
>
> Meanwhile the patient should take a full draught for once or twice of warm water, or gruel, or camomile tea, unless he spontaneously clears his stomach of all food by vomiting. If there be great sinking and coldness, the mustard emetic may be tried. But as soon as the stomach is cleared, or sooner if the pain or distress at the stomach be urgent, he should take a hundred drops of the tincture of opium (laudanum) in some hot water with tincture (essence) of peppermint. So much may be done without waiting for medical aid. But in all cases it is proper that aid should be obtained as speedily as possible.
>
> As soon as the state of the stomach offers any chance of its being retained, a full dose of the submuriate of mercury (calomel) should be given in powder. If rejected, this should be repeated immediately, and so until one dose is retained. One scruple may be regarded as the full dose. After this, half of the dose may be given once in two to four hours. Meanwhile the tincture of opium should be repeated at least once in an hour, and oftener when there is great distress, till the patient manifests the influence of the opiate by relief, or by its narcotic effects. The opium may be combined with camphor and with peppermint, or any other grateful aromatic. Likewise, from time to time, hot brandy and water, or other stimulants, may be given until the warmth is restored.
>
> In every severe case at first and in every case where relief has not been obtained within two hours, blood-letting should be practiced. This should be employed the sooner if the pulses are failing; for there is a risk that no blood can be procured, should delay be allowed. It is important that the patient be kept in the horizontal position during the operation, and that the orifice in the vein

be large. The bleeding should be copious; that is, it should be continued till the pulse becomes more full or more strong, or both; or till the patient experiences unequivocal relief. For this purpose, twenty, thirty and forty ounces of blood have often been taken with advantage; although eight, ten, or twelve, have often sufficed.

If subsequent to this there be great tenderness, with some internal heat in the abdomen, leeches may perhaps be applied with advantage. The repetition of the general bleeding will not probably be found expedient, or useful, except in very rare cases.

The mere failure in the pulse should never deter from venesection. But when to this are added other symptoms of debility, after the spontaneous evacuations have occasioned great exhaustion and when the surface is covered with a clammy sweat, there can scarcely arise any benefit from the practice, and evil is said to have followed it.

Of the use of the mustard emetic in the state of collapse mention has been made already. It may be worthy of a trial; but probably the experience in Great Britain will soon decide on its merits.

If the course pointed out can be successfully pursued, the patient will be restored to a more natural state of feeling, his warmth will be regained, the suffering at the precordia will be diminished, the vomiting and purging will cease and he will probably fall into a sleep which will gradually become tranquil. In this he should be left undisturbed for a while. But many hours should not be allowed to pass before some laxative should be administered; and this should be repeated from time to time until free ejections have been obtained of a dark, or of a yellow color. Castor oil is well adapted for this purpose, combined with other articles according to circumstances. The simpler compound infusion of senna may be used, where the oil is not retained on the stomach. Enemata may be employed in aid of these purgatives. On this point it should be borne in mind that much may be gained by injecting a large quantity of any mild liquid into the rectum, to the amount of from two to four pints. For this purpose Maw's syringe will be found exceedingly well adapted.

When the bowels have been effectually cleared, the subsequent treatment should be of the most simple kind. The patient should be kept at rest and tranquil; his diet should be light and in small quantities; pain, or irritation, or watchfulness should be relieved by opiates; and the bowels should be moderately evacuated daily, till his convalescence is established. With patients, who are relieved suddenly by early treatment, great care will be requisite, lest by indulgence in food, or premature exertions a relapse be induced. When debility remains and is protracted after the disease subsides, tonics should be employed. By their aid the liability to indigestion will be diminished and the general susceptibility of morbid impressions will be counteracted, or lessened. The same discretion is requisite in the use of them, as in other cases. Likewise it is necessary to distinguish between the advantages of tonics and those stimulants and cordials. Any excess in the use of these must be baneful.

A few observations may be useful in respect to remedies, which should be avoided, or used with caution, while they are such as would very naturally be suggested.

The first of these is the warm bath. When we see the patient shivering with cold, the skin livid, and the suffering with cramps in the limbs, it would seem that the warm bath was peculiarly calculated to afford him relief. Yet most of those who have tried it, assure us that its effects are often rather injurious; and that the benefits, if any, are less than those which may be attained in the same time by other means. The first impression from the warm bath is not always grateful to the patient. He sometimes complains of the heat, which persons in health support with ease and find agreeable. Sometimes the patient has been greatly distressed on immersion, so that his immediate removal has become necessary. But when present comfort is obtained from the bath and his heat restored by it, he is frequently chilled immediately on removal, and friction will not restore him sooner than if the bath had not been employed. Meanwhile, much time has been occupied, and the patient, in greatly depressed state of his strength, has been exhausted by the fatigue to which he is necessarily subjected.

The same objections do not apply to a hot air or vapor bath, or not so fully. This may sometimes be found useful as an auxiliary remedy. The best mode of using it perhaps is to introduce the vapor of burning alcohol under the bedclothes, as may be done by the apparatus of Mr. Jennings, long known in this country. But even in regard to this mode of bathing, we do not find very favorable reports from many persons who have tried it.

Generally it has been found that neutral salts do not operate favorably in the spasmodic cholera. The more stimulant cathartics alone, or combined with castor oil, are to be preferred; the submuriate of mercury having first been strongly recommended.

Sub-carbonate of Magnesia has been strongly recommended by Dr. Ainslie, a physician of respectability and who has had experience in India, but it does not appear that others, in trying this article, have derived from it the same benefits as Dr. Ainslie believed himself to do. Yet, there may be found occasions when it may be usefully employed. It would be best perhaps to add rhubarb and combined with aromatics, such as mint or ginger. In cases somewhat analogous to cholera, this combination has been administered with great advantage.

During the late 20's and early 30's, persons trained in homeopathy came over from Germany and American physicians became interested in the subject and began to practice its tenets. There were no homeopathic medical schools until Dr. Constantine Herring started one in Allentown, Pennsylvania in 1835. Dr. Gramm introduced the practice of homeopathy into New York in 1825. On the other hand homeopathy was introduced into Detroit by regular physicians who took up its practice. Among the first of these were Dr. S. S. Hall and Dr. P. M. Wheaton. So while cholera was at its height in Columbus there appeared a paid announcement in the *Sentinel* for July 25, 1833, which reads as follows:

CURE OF THE CHOLERA

Some cases of Cholera having taken place in this town, which have terminated fatally, as a *Homeopathic Physician*, I feel myself in duty bound towards the public to give them, hereby, notice that I am confident of being able to cure that dreadful disease by means of the *Homeopathic System* which during the last *ten* years has gained so many adherents in Germany, and which in regard to the Cholera, especially, has proved its superiority.

Public documents brought over by me testify to the efficiency of the aforesaid remedy; and that I myself have cured the Cholera by this system, so beneficial to mankind.

Application to be made to
Leopold Lehman
Corner of Front and State Streets.
Columbus July 24, 1833.

Drs. Platt, Howard and Curtis were the outstanding "steam doctors" of Columbus, Curtis had come from Virginia to edit the *Thomsonian Recorder*. He carried on a bitter war with both the allopathic physician and the "reform doctors." The cholera epidemic of 1833 was the beginning of this cult in our City. Dr. Howard, who had claimed to possess a treatment which was absolutely specific against the disease, had himself died of it. Not only had he died, but his wife, one daughter, a son-in-law and two grandchildren. This fact, together with the second report by the lay members of the board of health, destroyed the public's faith in this type of healing.

There were also a few "reform doctors" in practice in Columbus at this time while in the next village north of the city they operated a thriving medical school. They protested against the uniform custom of bleeding. They, like the Thomsonians, believed in heat, maintaining, with much sagacity, that "heat was life and cold was death." For the one point of the lancet they substituted a dozen and wet-cupped their patients instead of bleeding them. They used much boneset tea and lobelia and gave drenching sweats to get rid of the calomel which had been deposited in their patients' bones by the allopathist.

As the disease progressed we find the newspapers of the day full of advice to their readers. For instance we found a quotation from the *Cincinnati Republican* in the *Sentinel* of August 15:

> *The use of ice* is recommended. The prudent and judicious use of ice, iced drinks and iced creams.
>
> *Malt Liquors.* Experience has shown that malt liquors do not resist an attack of children. I have not met with a single fact in the city that was against the use of malt liquors. Daniel Drake.

From this time on until the end of September fatal cases were reported daily. Many persons, however, attacked with choleraic symptoms revived.

In the Ohio Penitentiary, still located on the old prison lot of 10 acres in the southwestern part of the town facing the Scioto River, were housed 303 convicts. Many of these were employed in building the new prison north of town (its present site). The contracts called for a minimum of 65 men. The men became sick and all were taken off the job. Wild rumors spread through the town that all or nearly all had died. There were actually 100 convicts who were ill or who claimed illness; of these, it was agreed that thirty-five were well-defined cases of cholera. Eleven deaths were officially attributed to cholera in the prison. By the tenth of August the Penitentiary was entirely free of the pestilence. Shortly afterwards 100 prisoners were put back on the job of building the new prison. Rumors, however, still floated about the State as to the dreadful conditions in the Penitentiary. Hence in the mortuary reports the *State Journal* of September 14 makes the cheerful observation that the convicts continued to be entirely exempt from the Cholera. "A large detachment of them," continues the paper, "are employed daily on the new edifice, and a healthier set of men we have never seen. We understand that they are fed exclusively on bread and salt meat, but whether this is the sole cause of their exemption we are unable to say."

Finally the disease ran its course.

The *Columbus Sentinel* of Thursday, September 26, announced:

> We have at length the satisfaction to state, Columbus is free from cholera! The last case occurred on Saturday—that of Mr. S. Snydam which proved fatal; and it was a solitary one, there having

been none for several preceding days. The health of the town is now excellent, and we hope soon to see business revived in all its former activity.

On October 12, the *State Journal* made this reassuring announcement: "We have the satisfaction to state that no case of cholera has occurred in this town since our last publication, to our knowledge. Columbus may now be considered entirely free from disease, and as healthy as in the most favorable seasons." The final report of the Board of Health, published November 2, gave the following list of deaths by cholera in the town of Columbus, from July 14 to September 29, inclusive (the figures indicate the date of deceased):

July 14. Josiah Stagg; 17. Margaret McHenry, Sophie Brickle; 23. M. Bigwood, Mrs. West, Mrs. Mills; 25. two children of Mrs. Hiesler, M. Worley; 26. J. Woods, Mrs. Woods; 27. William Johns; 29. Henry Jewett.

August: 4, child of H. D. Little; 5. Mrs. Wise; 6. second child of Mr. Little; 7. Mrs. Tobin, Mr. Morningstar; 9. Ann Howard; 10. Joseph Bishoe; 12. son of N. Rochester, son of B. Henley, B. Henly, Mr. Maynard; 14. 3. Widle, C. Otstot, E. Flagg, N. Rochester 15. H. Howard; 16. child of Mr. Logue; 17. Mrs. Cuss; 18 Mr. Winkelpleck; 19. child of Mrs. Carr, Henry Combs, 21. child of Mr. Logue, H. Howard, Mrs. Vanatta; 22. William Waters; 25. J. S. Whyte, Mrs. Skater; 26. C. Lorwig, B. Switzer, Mr. Smarts; 28. Mr. Storrs, William Sterritt; 30. Mr. Rammelsburg, Mrs. Wood, Isac Wood, Thomas Wood.

September: 3. daughter of Jarvis Pike; 4. Ephraim Sells, C. C. Beard; 5. Mrs. Beard, Mrs. Eswine, child of C. C. Beard; 6. P. Sweet; 8. Mrs. Britton, Mrs. Harding, Mrs. Harding; 9. Mrs. Walker, child of Mr. Schoedinger; 11. Mrs. Bancroft; 12. child of Mr. Sweet, J. L. Turner, W. T. Martin, Jr.; 13. Mrs. Blackman, Mrs. Jett; 14. Mr. Compston, Mr. Schödinger; 18. child of Mrs. Tiller, Mrs. Clairn; 21. S. Snydam; 28. Mrs. Sweet, 29. E. Stewart.

These names are exclusive of six colored persons, eleven convicts at the State Penitentiary, and eight other fatal cases occurring within three miles of the town, making in all 100 deaths officially attributed to Asiatic cholera.

This report was published in the local papers and signed by all the members of the Board of Health, viz.: P. Sisson, M.D., S. Parsons, M.D., M. B. Wright, M.D., Joel Buttles, John Patterson, William Mum, Alfred Kelly, P. B. Wilcox, R. Brotherton, C. Heyl, George Jefferies, John Noble.

Because of sympathy with the allopathic school of medicine many who have written of this epidemic in Columbus have carried along the statement that most of the "steam-doctors" of that day quitted the town. This is evidently not true because the lay members of the local board of health issued a separate report calling attention to the harm these men had done. This second or lay report appeared in the local newspapers of the week of November 9, 1833. It follows:*

FINAL REPORT OF THE BOARD OF HEALTH

The undersigners, members of the Board of Health of the town of Columbus, being now happily released from the further performance of the duties of our appointment by the restoration of general health, deem it a duty which we owe to the public to submit in this final report a few general remarks in relation to the alarming disease which has recently afflicted our town.

---

* *Columbus Sentinel,* 3: No. 35 (Nov. 9) 1833.

The first case of cholera occurred among us on the 14th day of July and the last on the 29th of September. Between these dates, the total number who fell victims to this disease within the limits of the town was 92 of which 11 were among the prisoners confined in the Penitentiary. The total number of inhabitants in this town at the time cholera appeared among us is supposed to have been about 3,500 of whom nearly one fourth part removed temporarily from the town during the prevalence of the disease.

It is worthy of remark, that the cholera continued in this place considerably longer than it has usually done in towns similarly situated and comparing with it as to population. We have reason to believe that this may be attributed mainly to imprudent exposure: to improper living, both in regard to quality and quantity of food, and especially to the free use of highly stimulating medicine, recomended and taken under the mistaken belief, that they were antidotes against attacks of the cholera. Indiscreet indulgences in the use of fruit and of crude unripe watery vegetables, are ascertained to have preceded in almost every instance, the attacks of cholera, and are believed to have had a direct and powerful agency in provoking the disease. We are also fully satisfied that excess in celery and drinking was a prolific source of cholera and especially fever.

Of those who made use of the Cholera syrup (a heating medicine recommended by a certain class of practioners as a specific for the prevention of Cholera) a far greater portion were attacked with the disease than of any equal number of persons who did not make use of it, and of those who were attacked after using this medicine in any considerable quantities, very few recovered. We have no doubt that a free use of this heating medicine was the immediate cause of obstinate fevers.

In support of these opinions, we refer to the fact, that in the Penitentiary where strict rules in regard to diet were enforced and when the use of the heating remedies as a measure of prevention were prohibited, a very large proportion of those attacked with cholera were cured, the disease was in a short time expelled and the convicts subsequently enjoyed good health.

It is also true that few among the temperate and regular livers who avoided the use of heating medicines recommended as precautions were attended either with cholera or any other serious disease.

As some of the members of the Board of Health have been called upon by persons at a distance for information as to the success of the Thomsonian or steam practice in the treatment of cholera, we conceive it to be a duty which we owe to mankind thus publicly to state as the result of experience in the place and of our own observation, that no reliance can be placed on that system of practice, either for the prevention or cure of this formidable disease.

In the early part of the time, during which the cholera prevailed among us, many of our citizens placed much reliance on the Thomsonian remedies. This confidence led them to disregard the precautions so generally recommended and deemed of so much importance, in the prevention of cholera by regular physicians. In several instances, the premonitory symptoms were temporarily checked by the use of the Thomsonian remedy. This operated to increase the mistaken and fatal confidence which reposed in these remedies, and in our opinion contributed greatly to increase the number and violence of the cases, and to prolong the continuance of the disease among us. These remedies only checked or disguised the symptoms. They did not remove the cause of the disease. And when like a smothered fire it broke forth with increased violence, fully developed, the remedies of that system were found in almost every instance to be utterly powerless.

During the latter part of the time that the disease prevailed here, very few persons could be found who were willing to trust their lives or those of their friends in the hands of the Thomsonian practitioners; and the extraordinary mortality which occurred in the families of those who practiced on the Thomsonian plan and among those who placed such entire reliance on their skill, sweeping off in several instances nearly whole families, affords melancholy but strong evidence of the inefficiency and worthlessness of remedies in which such entire and fatal confidence had been placed.

We are neither of us physicians, and in making these remarks, we disclaim all personal interest and feelings, as well as personal hostility towards those who practice on the Thomsonian system.

P. B. Wilcox
Alfred Kelly
J. Patterson
Wm. Miner
C. Heyl
J. Buttles
J. Noble.

During the next few years no cases of cholera occurred in Columbus but the town had received a serious setback. The epidemic was soon forgotten and the completion of the National Road gave a great impetus to its growth. This was shortly followed by the development of the railway.

References

1. Abbott, M. E. History of Medicine in the Province of Quebec. Toronto, 1931, 94 pp.
2. Bareis, G. F. A History of Madison Township Including Groveport and Canal Winchester, Franklin County, Ohio. Canal Winchester, 1902, 515 pp.
3. Burr, C. B., et al. Medical History of Michigan. Minneapolis, 1930, 2 vols.
4. Charlton, M. Outlines of the history of medicine in Lower Canada. Parts III, IV. Ann. Med. Hist., 6: 222–312, 1924.
5. Committee under the direction of the Counsellors of the Massachusetts Medical Society. A Report on Spasmodic Cholera. Boston, 1832, 190 pp.
6. Howe, H. Historical Collections of Ohio. Cincinnati, 1902, 2 vols.
7. Lee, A. E. History of the City of Columbus. N. Y. and Chicago, 1892, 2 vols.
8. Loving, S. Some reminiscences—general and medical. *Proc. Old Northwestern Genealogical Soc.*, 7: 221, 1904.
9. Martin, W. T. History of Franklin County. Columbus, 1858, 450 pp.
10. Moore, D. L. The Medical Pioneers of Columbus. Repr. from *Columbus M. J.* (Feb. 1) 1898.
11. Studer, J. H. Columbus, Ohio, Its History, Resources and Progress.
12. The files of the newspapers of the times made up the real source material used in the preparation of this MS.

◆

HISTORY OF MEDICAL EDUCATION IN NEW ORLEANS

FROM ITS BIRTH TO THE CIVIL WAR

By A. E. FOSSIER, M.D.

NEW ORLEANS, LA.

PART II*

NEW ORLEANS SCHOOL OF MEDICINE

In the *New Orleans Medical News and Hospital Gazette* for December, 1855, appeared the following advertisement:

> PRIVATE EXAMINATIONS
>
> The undersigned have formed an association for the purpose of thoroughly preparing students of medicine in all the Branches taught in the Medical Schools of the country, through the means of regularly conducted examinations. They will also receive "Office Students" for the term of six months, or one or two years. The examinations will commence immediately after the Introductory Lectures in the Medical Department of the University of Louisiana, and continue until the close of the session.
>
> | | |
> |---|---|
> | I. L. Crawcour, M.D. | Anatomy and Chemistry. |
> | Howard Smith, M.D. | Materia Medica, Surgery and Practice. |
> | D. Warren Brickell, M.D. | Obstetrics and Diseases of Women and Children and Physiology. |
>
> TERMS
>
> | | |
> |---|---|
> | For the session of four months. | $ 30.00 |
> | For office students, six months. | 50.00 |
> | For office students, one year... | 100.00 |

Evidently this quiz class was the incentive for the organization of a new medical college in this city.

The accession of population, not only of New Orleans and of the State of Louisiana but of the whole Southwest, was rapid. The number of inhabitants doubled, tripled and quadrupled in a comparatively short period of time. The clinical facilities presented by the Charity Hospital were unsurpassed in this country. The reputed learning of the physicians and the unexcelled skill of the surgeons of this city attracted large numbers of medical students who crowded the halls of the Medical Department of the University of Louisiana. Such were the conditions which encouraged the founding of a new school of medicine.

Despite the strenuous objections of the professors of the old college and their friends, and the impeding tactics of obstructionists, the organizers of the new school of medicine achieved their ambition. The establishment of a new College of Medicine in New Orleans was announced in an editorial in the *New Orleans Medical News and Hospital Gazette* of May, 1856. It reads in part:

> THE NEW ORLEANS SCHOOL OF MEDICINE: Under the general law of the State of Louisiana, an institution has been duly organized and incorporated under the style and title of the "New Orleans School of Medicine" with full powers to impart medical instruction and to grant diplomas to such as may be deemed worthy of the same. In a short time, a full and comprehensive prospectus

---

* Part I appeared in the July issue of ANNALS OF MEDICAL HISTORY, n.s. 6: 320, 1934.

> will be issued, in which will be set forth a plan of medical education which, we venture to assert, will meet the unqualified approbation of the profession throughout the country. An elegant and commodious edifice is in process of construction, and will be ready for use before the beginning of the lecture season; and every effort will be made to supply all the material necessary for the most satisfactory demonstration on the various branches.
>
> The announcement of the establishment of a new medical school in the City of New Orleans, will excite no surprise amongst our readers; that emotion has long lingered on the strange phenomenon of the existence of but one such institution in a place of all others the most fertile in the resources necessary to the acquirement of a complete medical education. With clinical advantages unsurpassed, if equalled in the world, and with opportunities for the study of pathology and anatomy in all its phases, such as are elsewhere unknown, it is strange indeed that the profession of New Orleans should have so long remained inactive. . . . Not that we mean one word of detraction from those who have been working in the mine; on the contrary we are proud to acknowledge that they have accomplished much; but we are surprised, that in a mine so rich, there should as yet have been but one shaft sunken. Competition is truly said to be the life of trade, and yet it is no more true of trades than of professions. . . . It is ~~in~~ this spirit of honorable rivalry, that the New Orleans School of Medicine enters the lists, and on this fair basis she is confident of a liberal support from those to whom she promises equivalent benefits. . . .
>
> The annual pilgrimage of Southern young men to the medical schools of the North is an unnatural and humiliating sight, yet we have but ourselves to blame. So far from there being a reason why New Orleans should be restricted to a paltry class of two hundred students of medicine per annum, there is every possible reason why she should have trebled that number; and to all of them she can afford greater facilities for the proper acquirement of a medical education than any other city in the Union.

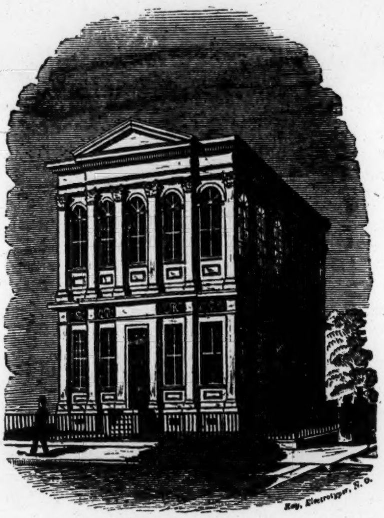
Kay, Electrotyper, N. O.

FIG. 11. NEW ORLEANS SCHOOL OF MEDICINE, CORNER OF TULANE AVENUE AND VILLERE STREET, OPPOSITE THE CHARITY HOSPITAL.

The New Orleans School of Medicine was unostentiously inaugurated on Monday, November 17, 1856, at eleven o'clock in the forenoon. But scant notice was given to that occasion in the daily press. The *New Orleans Medical and Surgical Journal* was silent on the subject.

The *Picayune* of November 16, 1856, commented on the advent of the new college as follows:

> The rapidity with which the enterprising faculty of this new school of medicine have erected their college edifice, has surprised the community.
>
> Thus far, they have proven themselves equal to the task of contending against difficulties, and they now open the doors of as well appointed an institution as is to be found in the land. They have the

most ample advantages to offer their pupils in the wards of our great Charity Hospital, and everything looks as if they were working in right good earnest. So much for well directed private enterprise.

The College edifice was situated at the corner of Common, now Tulane Avenue, and Villeré Street, directly opposite the main entrance of the Charity Hospital, on the site of the present ambulance building. It was erected at a cost of $15,000. The building was well lighted and well ventilated, and it was proclaimed by many to be "one of the most imposing edifices in the city." It was said that it contained two of the most beautiful lecture rooms ever constructed. Each comfortably seated 300 persons. The Dean's room was spacious and there were eight anterooms for the use of the professors. It had also a janitor's room, and a hall to be used as a dispensary.

In a contemporary medical journal[8] it was stated that the dissecting room was the finest in the country, and was well supplied with gas and with rain water from a large cistern on top of the building. In the same editorial it was mentioned that water was conducted to every room in the house from the cistern and that gas found its way to every point where it was required.

"The museum room is stored with everything requisite for the complete demonstration of a course, and the Faculty are early expecting two more shipments from Paris of the most elegant preparations ever sent to this country." This article continued:

> The obstetrical cabinet of wet preparations is probably not equalled in the Southern country. It has been purchased from an ex-professor of one of the oldest schools in the land, and consists of about two hundred of the rarest and most valuable specimens from nature, all in the most beautiful condition for the closest examination. The chemical and philosophical apparatus are equal to any, having been ordered from the best manufacturers in Europe and America, and without regard to cost. . . . Here, then, is what has been done; and we may undertake to say that it has all been done by surmounting as many obstacles as were ever thrown in the way of any similar enterprise in the land. But obstacles, difficulties, are nothing in the way of well directed and useful enterprise; and success is only the more honorable and gratifying, when it comes as a triumph over natural and factitious obstructions combined.

But that writer frankly acknowledged that:

> The New Orleans School of Medicine owed much, however, to the enlightened liberality of others besides those who enrolled themselves as pupils in the institution. To the generosity of our private citizens she was indebted for nearly the whole of her beautiful museum; and to the wisdom and public spirit of the Board of Administrators of the Charity Hospital, she was indebted for that firm footing.

The tuition fees were practically the same in the two colleges. Seventy-two students hailing from Louisiana, Mississippi, Texas, Alabama, Georgia, North Carolina, South Carolina, and Nicaragua matriculated for the opening session. This unexpectedly large number of students, which was claimed to be the largest initial class of any medical college in the land, was most gratifying to the Faculty, because it boded the ultimate success of the school.

"The success of the institution, so far as early patronage goes, is placed beyond all doubt on the part of its friends; and if the institution has any enemies (which we flatter ourselves it should not have), they had better not waste their labor in attempting to stay its progress"; warned the *New Orleans Medical News and Hospital Gazette.* It enthusiastically opined: "What new Medical School has ever made a more flattering beginning? If energy, industry, and a firm determination to excel, will cause the class of another year to be twice or three times sixty-seven, then are the Faculty sure of their presence."

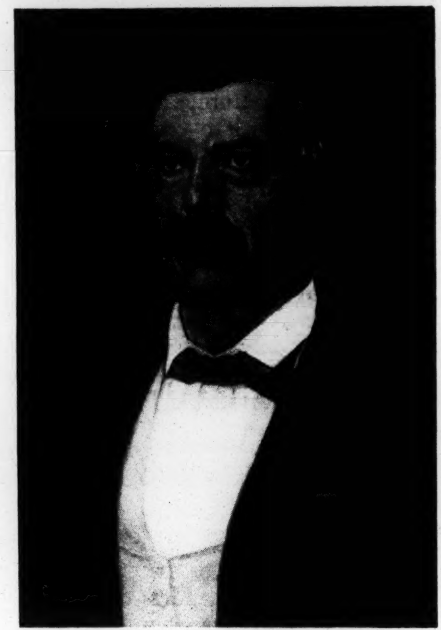

Fig. 12. Dr. E. D. Fenner.

The new school offered a five month course. The first dean was Doctor E. D. Fenner. The organizers and the first members of the Faculty were: Erasmus D. Fenner, M.D., Professor of Theory and Practice of Medicine; A. Forster Axson, M.D., Professor of Physiology; Thomas Peniston, M.D., Professor of Clinical Medicine and Auscultation and Percussion; Samuel Chopin, M.D., Professor of Surgery; Isaac L. Crawcour, M.D., Professor of Chemistry and Medical Jurisprudence; Howard Smith, M.D., Professor of Materia Medica and Therapeutics; John M. W. Picton, M.D., Professor of Diseases of Women and Children; D. Warren Brickell, M.D., Professor of Obstetrics; Cornelius C. Beard, M.D., Professor of Anatomy; Anthony A. Peniston, M.D., Adjunct Professor of Anatomy.

It was announced in the first prospectus of the school that it was the intention of the faculty to demonstrate practical medicine and surgery at the bedside as fully as possible. And that in addition to the facilities for this purpose afforded by the hospital, a dispensary would be established at the college, for the examination and treatment of such patients as may not wish to enter the Hospital. Here the students would be required, in their turn, to put up prescriptions, apply dressings, etc. "Indeed every effort would be made to render the course of instruction as practical as possible."

This was the first dispensary established in the Southwest. It served its purpose well, because there were no facilities in the Charity Hospital for the treatment of outdoor patients; ambulant cases were treated in the wards of that institution, much to the discomfort of the resident sick. The following editorial in the *New Orleans Medical News and Hospital Gazette,* of February, 1857, is the only source of information from which a glimpse may be had today of the modus operandi of that dispensary and of the lying-in department of the new medical college; it reads:

They have now opened a Free Dispensary for the indigent sick and lying-in women, where advice and medicine will be furnished gratuitously on stated days of the week. In New Orleans, the word Dispensary is something new. Indeed, it may be said to be new in all Southern cities. It therefore behooves us to tell what the objects of the institution are, what is to be gained by the establishment. These are threefold—first, as regards the advantages derived by the student of medicine; second, as regards the welfare of the sick poor; and third, as regards the interest of the State in a pecuniary point of view. Experience at the North has proven clearly that there is a large class of cases which may be treated at the Dispensary with far more advantage to the student of medicine. Of this class we may mention, all minor surgical operations which do not require the patient to take to bed; the large class of skin diseases; various chronic affections; recent cases of venereal disease; most of the diseases of children, etc., etc. By the concentration of these cases at the dispensary on stated days, the student is not only enabled to see disease in variety, but he is required to make diagnosis, write prescriptions, apply dressings, and compound and dispense medicines. But if all this is useful to the student, there is still another point of more importance than all others. By the establishment of a lying-in department, the student is enabled to attend the parturient woman entrusted to his care, at her own home, where all his duties may be performed with the most comfort to his patient, and the greatest degree of instruction to himself. . . . "The lying-in woman receives the very best attention; for she is not only assigned to the care of an advanced student of medicine, who is known to be capable of attending her (and is, therefore, far superior to the female midwife), but in case of any difficulty whatsoever occurring in the case, the Professor of Obstetrics in the New Orleans School of Medicine is bound to give prompt attention. So that, in reality, the indigent parturient female who places herself under the care of this dispensary, is better off than many women of ample means, who from a sense of false modesty, place themselves and their offsprings in the hands of old women midwives, who either do mischief by meddling, or allow mischief irreparable to take place, through total ignorance of the manner of arresting or relieving. . . . The faculty have opened their dispensary for the benefit of their pupils—wishing at the same time to give their mite towards the relief of suffering humanity; but they are sure that neither the people of this State nor of this City, will expect them to furnish medicines gratis to thousands. One or two thousand dollars will enable them to do more good than has ever been done in New Orleans with four times the amount of money. Here, then, is another of the improvements already begun by the Faculty of the New Orleans School of Medicine.

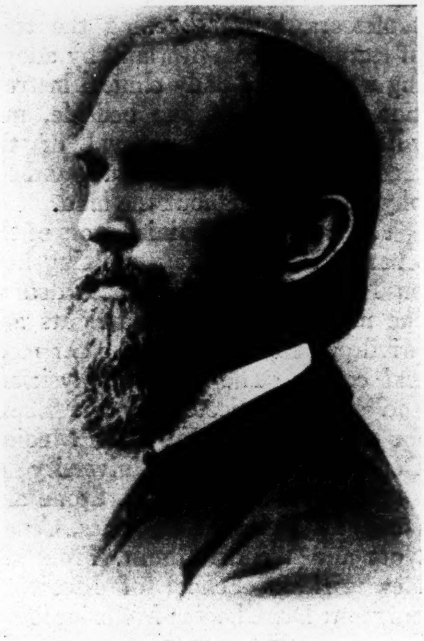

FIG. 13. DR. D. WARREN BRICKELL.

The efforts of the Faculty of the new Medical School to improve the existing system of medical teaching by increasing the usual number of professors, by lengthening the term of lectures one month, and by adopting a system of daily clinical instruction especially at the bedside, met with the hearty approval of the medical students of the South and the physicians throughout the land.

The Board of Administrators of the Charity Hospital, at a meeting held on November 3, 1856, accorded to the new school the same rights and privileges enjoyed by the older medical college. The visiting physicians and surgeons elected by the Board for the year were: From the Medical Department of the University of Louisiana: Surgeons: Drs. Stone and Hunt; Physicians: Drs. Jones, Cenas, Nott and Wedderstrandt. From the New Orleans School of Medicine: Surgeon: Dr. Chopin; Medicine: Drs. Fenner, Beard, Picton, Thos. Peniston, and Axson. Physicians from the Profession at large: Drs. William Cox, A. Peniston, Martin, and Taney.

The New Orleans School of Medicine was the pioneer in clinical teaching, not only in this city and in the Southwest, but in the Union as well. It is evident that it was organized because it was sensed by its founders that the students who sought their medical education in New Orleans were not receiving the proper clinical teaching and that a wealth of clinical material was wasted, and that the students were poorly prepared for the practice of their profession. All credit must be given to them for inaugurating a comprehensive and practical system of bedside teaching, for which this city enjoyed for so many years a well-merited reputation.

We are indebted today to the masterly article "Remarks on Clinical Medicine" by Professor Fenner[9] for the following description of the medical teaching then in vogue and of the reforms and innovations inaugurated by the new school:

> Medicine is an art as well as a science; and like all other arts, that of skillful practice can only be acquired by observation and experience. He who devotes himself to his profession with the determination to master it and to realize its advantages as far as he is capable, requires extensive opportunities of seeing various forms of disease, injury and deformity, to which the human system is liable; of bringing to bear upon them all his senses, as well as his judgment, and likewise, of observing the effects of medicines and the curative powers of nature. Without such opportunities, he may store his mind with all the learning of the books and teachers; he may understand all theories that have ever been promulgated, but he will not be able at once to make a skillful application of his knowledge to any useful purpose. He would be like a navigator, who had never managed a larger vessel than a jolly-boat; a mechanic who never handled a tool; an engineer who never bridged a rivulet nor saw a steam engine in operation; an architect who has only seen the pictures and drawings of temples and palaces; or an astronomer who never directed a telescope. Yet such has been the general course of medical instruction followed in this country from the beginning, and is for the most part even to this day. In Europe, this grand error has long since been recognized and remedied; but we in America have but recently acknowledged its importance, and applied our inventive genius to its correction. The course of qualifications preparatory to entering upon the practice of medicine hitherto pursued by nine-tenths of the medical students in this country has been to read a text-book on each of the

different branches, to hear two courses of lectures, occasionally walk through the wards of a hospital, where he may see a Professor prescribe for a number of patients or perform a surgical operation, then be able, when questioned, to repeat a respectable amount of what he read in books or been told by his teachers, and he obtains a diploma. Under such system of instruction; experience is only acquired at a considerable expense to human life. . . . I think I may safely say that previous to the present day, nothing like a systematic course or plan of clinical instruction has been adopted by any of the medical colleges in the United States. Indeed, there is scarcely a city in the Union that commands the necessary facilities; but it might appear invidious in me to attempt to particularize their comparative advantages; so I will only mention the general course that has hither been pursued by the most prominent medical colleges, and close this paper with a description of the plan adopted by the New Orleans School of Medicine.

The course hitherto pursued by such of our medical colleges as command any hospital privileges whatever has been to allow the students to visit the hospitals twice a week, when the professors walk through the wards with a crowd of students at their heels, and make a sort of running commentary on the different cases before them. The professors also deliver clinical lectures twice a week, and perform surgical operations before the class. New Orleans is the only city within my knowledge, that has a large hospital convenient to a Medical School and accessible to students daily without charge; but even here, the course of clinical instruction heretofore pursued has been pretty much the same as above described.

Most of our medical schools of late years have been trying to supply the want of hospital facilities by establishing clinics and dispensaries; but the defect is too glaring to require comment. The student of medicine must see disease and observe its daily progress from beginning to end, as well as the effects of remedies, before he can become a skillful practitioner.

The Faculty of the New Orleans School of Medicine, deeply impressed with the importance of demonstrating, as far as possible, all the practical branches of science, resolved on its inception, to quit the beaten tract so long pursued in this country, and to strike at once for the latest improvements in teaching, which have been established in the greatest medical institutions of the day.

The following is our plan: The student is provided with a printed ticket, to be pasted in his note-book, and having a suitable blank space for inserting the number of the ward and bed, the name of the patient, his age, nativity and vocation, the diagnosis, duration and result of the case. Most of these blanks can be filled at once, but, of course, some of them must remain till the termination of the case.

To facilitate the inexperienced student in the novel duty he is about to undertake, and to answer the purpose of the *Chef de Clinique*, he is also furnished a printed sheet containing the following series of questions relative to the history and existing state of the patient:

QUESTIONS RELATIVE TO THE HISTORY OF THE CASE

Previous History:

How long have you been sick?
Where were you when attacked?
How were you taken—first symptoms?
How did the disease proceed?
What treatment before entering Hospital?
At what hour did you enter?
What was prescribed by the House Surgeon?

Present State:

Note the general appearance of the patient.
Note the skin, whether hot or cold, dry or moist.
Note the tongue, appearance of.

Note the thirst.
Note the stomach, whether quiet, nausea or vomiting.
Note the abdomen, whether full or not, tender on pressure or not, tympanitis, or dropsical effusion.
Note the bowels, whether loose, easy or costive.
Note the urine, free or scant; color of it.
Note the chest symptoms—breathing, cough, pain, physical signs.
Note the heart, sounds of.
Note the pulse, number and character of.
Note the appetite.
Note the rest and sleep.
Note the pain, where located.
Note the debility.

Diagnosis:

Remarks of Visiting Physician.

Treatment:

Having asked all these questions and made a connected narrative of the replies, the student is prepared to receive the Visiting Physician, who requires him to read aloud what he has written, corrects all inaccuracies, and proceeds to pronounce the diagnosis, with such instructive explanations as he thinks requisite. The student can insert in his note-book such of these clinical remarks as he may wish to preserve. The professor then points out the indications, dictates his prescriptions, and proceeds to the next bed, where the attending student goes through the same process if he has a new patient. On the following morning the student visits the patient an hour before the professor, notes any change in the symptoms, and also the operation of the remedies prescribed. When the professor arrives, he can hear these notes in as little time as it would take him to get the same information by questioning the patient himself. After his clinical remarks, he prescribes again and passes on. This course is pursued from day to day till the termination of the case either in recovery or death. If the patient recovers, the professor makes a brief summary of the pathology and treatment of the case before discharging him. If the case terminates fatally, the body is followed to the Dead-house, where a post mortem examination is made before the students. Before opening the body the professor must declare his opinion of the pathology of the case, the seat of disease, and the morbid conditions to be found. He does this boldly; without claiming to be infallible in his judgment, but to test his skill in diagnosis, and his willingness for his pupils to profit by any blunder he may have committed. . . . I will say nothing of the clinical instruction to be given in the obstetrical wards of this hospital. The Legislature has granted us equal privileges in this as in every other department of the Charity Hospital, which we shall turn to the benefit of the students; but we hope to accomplish more in the obstetrical branch of our Free Dispensary. We here take the address of such indigent women as desire to be delivered at home, and when the call is made, a competent student, to whom the case has been assigned, starts promptly, and performs the duty, if the labor is simple; but if any difficulty presents he calls on the professor at once.

Our professor of anatomy, Doctor Beard, is a thoroughly educated oculist, and will demonstrate daily the proper method of diagnosing and treating the various diseases of the eye. He is a master of all the surgical symptoms that perform on this delicate organ.

It will be seen that the plan of clinical instruction we have adopted is much the same as pursued in the General Hospital of Vienna, which was introduced into the Meath Hospital, of Dublin, by Doctor Graves in 1821, and has been continued there ever since, with entire satisfaction.

I should not omit to mention also the practical instruction given at the Free Dispensary of the New Orleans School of Medicine, on three days of every week. Here we prescribe for thirty or forty patients a day, presenting the ordinary complaints of men, women and children. The students see how this is done, and also assist in putting up prescriptions.

Dr. Fenner ends his article by quoting Dr. Latham, of St. Bartholomew's Hospital of London, who said:

> I know that five out of six of those who profess to attend the medical practice of this hospital (and it is the same of other hospitals), never watch a single case of disease through its entire course, during the whole period of their pupilage. I say this with great sorrow, and as a warning to those whose pupils have yet to begin. This is what I mean by the materials of knowledge running to waste.

Dr. Fenner remarked that while this was true and applicable to the state of things hitherto existing in New Orleans, he predicted that this would soon change, because with its extensive hospital and beautiful lecture rooms, the day was not far distant when this city would rival Dublin, Paris and Vienna in the great business of clinical instruction, more especially for the qualification of the Southern practitioners.

The number of matriculants for the second session (1857–58) of the New Orleans School of Medicine was most flattering, the enrollment was 126 students of whom 33 were graduates. The commencement exercises for that year were held on March 31, 1858.

Prizes were offered by the Chairs of Chemistry and Obstetrics to the students who stood the best written examination on their respective subjects. The award for Chemistry was a silver cup and was won by Stanford Perry, of Louisiana; the prize for Obstetrics, a complete set of obstetrical instruments, was presented to J. F. Grall of Germany.

The first graduates from the New Orleans School of Medicine were: J. F. Glass, Georgia; Thomas Haughey, Alabama; Chas. L. Evans, Mississippi; William Sandel, Jr., Louisiana; A. J. Thompson, North Carolina; J. F. Grall, Germany; Thomas H. Powell, Tennessee; James E. Keator, Louisiana; Stanford Perry, Louisiana; Mark Andrews, Mississippi; D. W. Wilkinson, Mississippi; N. R. Payne, Mississippi; J. W. Chandler, Louisiana; M. P. Quinn, Louisiana; E. P. Stubblefield, Louisiana; W. C. Hicks, Mississippi; J. M. Scaife, Louisiana; P. J. Gibert, Cuba; William P. Smith, Alabama; S. L. Singletary, Louisiana; E. T. Gazley, Texas; W. R. Capehart, North Carolina; Richard S. Boyd, Tennessee, W. A. Stanley, Tennessee; A. A. Caruth, Louisiana; J. F. Allen, Tennessee; R. G. Stansers, California; J. W. Fitzpatrick, Alabama; J. W. Tottenham, Mississippi; G. W. Pearce, Mississippi; S. Wallace, Arkansas; W. S. Rogers, Texas; J. T. Jenkins, Alabama.

The New Orleans School of Medicine in the second year of its existence ranked eleventh in the number of graduates, among similar institutions in the United States. The Medical Department of the University of Louisiana was fifth on that list. The leading medical schools in the United States and their respective number of graduates were:

Jefferson Medical College, 209 Graduates
University of Pennsylvania, 145 Graduates
University of New York, 127 Graduates
University of Nashville, 109 Graduates
University of Louisiana, 68 Graduates
Georgia Medical College, 61 Graduates
College of Physicians and Surgeons, 53 Graduates
St. Louis Medical College, 49 Graduates
Medical College of Ohio, 43 Graduates
Rush Medical College, 36 Graduates

Pennsylvania Medical College, 35 Graduates
New Orleans School of Medicine, 34 Graduates
New York Medical College, 33 Graduates.

The following year the New Orleans School of Medicine surpassed, by a considerable margin, both in the number of students and of graduates, the Pennsylvania Medical College, the St. Louis Medical College, the New York Medical College, the Medical College of Ohio and the Rush Medical College. The University of Louisiana retained its respective position.

New Orleans was fast becoming one of the greatest medical centers in the Union. During the term of 1858–59, 497 students had matriculated in the two medical schools of this city, and at the end of that session the degree of Doctor of Medicine was conferred on 130 of these young men. The enrollment of the University of Louisiana was then 333 of whom 97 were graduates; of the New Orleans School of Medicine, 164 and 36 graduates.

The leading medical schools in the country were then: Jefferson Medical College with 570 matriculants and 256 graduates; the University of Pennsylvania with 410 matriculants and 140 graduates; the University of Nashville with 435 matriculants and 103 graduates; the University of New York with 350 matriculants and 97 graduates; the University of Louisiana with 333 matriculants and 97 graduates; the Medical College of South Carolina with 195 matriculants and 58 graduates; the Medical College of Georgia with 165 matriculants and 57 graduates; and the New Orleans College of Medicine with 164 matriculants and 36 graduates.

From these figures it will be seen that the prediction made by the friends of the New Orleans School of Medicine, that competition would prove to be beneficial to the two institutions, was confirmed.

The commencement exercises for the third session was held at the Lyceum Hall on April 1, 1859. The ceremony was opened by an eloquent and appropriate address by the Reverend B. M. Palmer, Pastor of the First Presbyterian Church. Professor Howard Smith addressed the graduates in the name of the Faculty. The Valedictorian, Dr. H. D. Evans, of Alabama, delivered a touching address. The degree of Doctor of Medicine was conferred on thirty-six students and the degree of Pharmacy on three.

In 1858 the New Orleans College of Medicine lost two of its most learned professors: one, Dr. Thomas Peniston, of the Chair of Clinical Medicine, who was forced to resign because of ill health, and the other Doctor John Moore White Picton, Professor of Diseases of Women and Children, who died on the twenty-eighth day of October. Dr. Peniston was succeeded by Doctor Austin Flint whose literary work had placed him in the front rank of medical writers in this country, and who was a clinician of international reputation. Doctor Flint taught in this city during only the winter months. During the spring and summer months he returned to the North where he resumed the teaching and practice of his profession. He also gave a private course in auscultation and percussion, consisting of twenty-five lectures, to students and practitioners of medicine.

Doctor Picton was one of the founders of the New Orleans School of Medicine, a surgeon of ability and an old practitioner of this city. As

Professor of Diseases of Women and Children he labored for the advancement of the Institution with all the energy of his mind and body. He was the oldest member of the Faculty. The only changes in the faculty for the session of 1857–58; in the Chair of Physiology, Dr. Anthony A. Peniston, adjunct Professor of Anatomy succeeding Doctor A. Forster Axson, and Doctor Theodore S. Clapp replacing Doctor Peniston.

When Dr. Austin Flint, Sr., was appointed to the Chair of Clinical Medicine and Auscultation and Percussion, in the fall of 1857, Dr. Thomas Peniston was made emeritus professor of that branch. He was the first Emeritus professor of this city. The teaching of clinical medicine and auscultation and percussion was then an innovation in this country. It was said of Dr. Flint that the importance of his teaching was

> . . . recognized by all who heard him, and it is not exaggeration to say, that the student who assiduously attended his lectures at the bedside and in the amphitheatre had a more useful fund of information on the subjects taught than could be elsewhere acquired in the country, and this because there was the time and the material, and than a teacher unsurpassed. Dr. Flint's style of teaching surpasses anything we have seen.[10]

Doctor Flint was the recipient of the first prize for the best essay of the year, presented by the American Medical Association at its annual conventions for the years 1852 and 1858. The titles of his contributions were: "On Variations of Pitch in Percussion and Respiratory Sounds, and their Application to Physical Diagnosis," and "Essay on The Clinical Study of Heart Sounds in Health and Disease." He was a prolific writer. The files of the local medical journals are replete with articles on his clinical observations made in the Charity Hospital.

The Faculty for that year was composed of the following professors: Erasmus D. Fenner, M.D., Professor of Theory and Practice of Medicine; Austin Flint, M.D., Professor of Clinical Medicine and Medical Pathology; Anthony A. Peniston, M.D., Professor of Anatomy; Austin Flint, Jr., M.D., Professor of Physiology and Anatomy; Samuel P. Chopin, M.D., Professor of Clinical and Operative Surgery; Cornelius C. Beard, M.D., Professor of the Principles of Surgery and Surgical Pathology; D. Warren Brickell, M.D., Professor of Obstetrics and Medical Jurisprudence; Isaac L. Crawcour, M.D., Professor of Chemistry; Howard Smith, M.D., Professor of Materia Medica and Therapeutics.

That year the Chair of Surgery was divided into two distinct branches: one of Clinical and Operative Surgery, which was retained by Doctor Chopin, and the other of The Principles of Surgery and Surgical Pathology which was held by Doctor Beard. Doctor Beard was replaced as Professor of Anatomy by Doctor Anthony A. Peniston, who for many years was a *privat dozent* of that important branch of medicine.

The title of the Chair of Physiology was changed to that of Physiology and Microscopy. This was the first time microscopy was taught in the Southwest. Doctor Austin Flint, Jr., the son of the renowned Austin Flint, the Professor of Clinical Medicine, was called to this professorship. Doctor Austin Flint, Jr., was then the Professor of Physiology of the Buffalo Medical College and of the New York Medical College. He was one of the first two physicians who devoted their time exclusively to research and teaching. He was said to have been an experimental physiologist.

Dr. H. D. Schmidt, formerly connected with the Mobile Medical School, was then appointed Demonstrator of Anatomy. He enjoyed an enviable reputation throughout the country as an anatomist and a microscopist. He had been for many years prosector to Professor Leidy of the University of Pennsylvania.

The New Orleans Medical College of Medicine was then considered by many unqualifiedly the best medical school in the land.

On March 29, 1860, the annual commencement was held at Odd Fellow's Hall, the largest in the city. It was located on Camp Street opposite Lafayette Square. It was filled to capacity. We can visualize the éclat of that occasion from the following abstract taken from a contemporary newspaper:

> A brilliant audience was in attendance. The music discoursed by Prévost's Orchestra, from the Opera House, was such as only Prévost can produce. The valedictories of Professor Crawcour and Dr. W. W. Scott of Mississippi, were most felicitous—indeed, the exercises passed off in a manner not only satisfactory, but more than flattering to the friends of the institution.

The degree of Doctor of Medicine was conferred on sixty-three students and to three on Pharmacy.

New Orleans was fast becoming the great medical center in the United States. Statistics for medical colleges for the session of 1859–1860 eloquently affirm that statement. The Medical Department of the University of Louisiana was fourth on a list of forty-two colleges, and the New Orleans School of Medicine was the seventh. The leading colleges in this country were: Jefferson Medical College, 630 students of whom 170 were graduates; University of Pennsylvania, 515 students of whom 173 were graduates; University of New York, 411 students of whom 138 were graduates; University of Louisiana, 401 students of whom 113 were graduates; University of Nashville, 401 students; Medical School of South Carolina, 248 students; New Orleans School of Medicine, 216 students of whom 63 were graduates.

The growth of the New Orleans School of Medicine was phenomenal. It surpassed the most sanguine expectations of its founders and patrons. It drew its students from the whole Southland. On its roster for that year were matriculants from Louisiana, Mississippi, Alabama, Texas, Tennessee, Georgia, Arkansas, North Carolina, South Carolina, Virginia, District of Columbia, South America, and California. In four years the number of its students increased from seventy-six to 216. Editorially, the *New Orleans Medical News and Hospital Gazette* of January, 1861, commented:

> Notwithstanding the terrible financial crisis and unprecedented political excitement which exists, the class of the New Orleans College of Medicine is this day (December 20, 1860) larger than it ever was at the same date, and the proportion of *bona fide* students (undergraduates) far greater. The Institution will stand fully up to the expectation of friends, and under other and more favorable surrounding circumstances would have surpassed this. Many students have been denied the pleasure of coming to us, and many have even had to return home after coming to the city, having found it impossible to make arrangements for even paying their board and lodging.

After the termination of that session the school was forced to close its doors because the Civil War had been declared.

The advent of the new school aroused the lethargic indifference of the medical profession in New Orleans and of the Southland. In its very incipiency it was in the vanguard of the march of progress of medical education. From the very first day of its organization it asserted its leadership. Its phenomenal success must be attributed to the vision, acumen, ambition, and unremitting toil of its faculty. It can be truthfully asserted that it was one of the most successful as well as one of, if not the most progressive schools of medicine in the Western Hemisphere prior to the Civil War. The editor of a contemporary medical journal commented

> The prospects of this medical institution are brighter than ever. Her friends stick to her; she is daily forming new ones; students are writing from all quarters; her facilities for teaching are unequalled in the land; and medicine will be taught within her walls and those of the Charity Hospital as the exigencies demand. We can truthfully say that the New Orleans School of Medicine has been the first to leave the old narrow path, and open the broad road of real practical improvement in the business of teaching medicine; it is by no means equalled, as her strides are so long that it is a difficult task to keep up with her. She has the ambition to be the very best school in the land, and youthful ambition, in this republican country of ours, is almost illimitable in its success. . . . We trust our students will come in early, as they will find the opportunity for dissection and clinical study unrivalled, and no man can acquire too much knowledge in either branch. Only think! Daily visits with one or all of five physicians at the bedside of the sick in the hospital, and tri-weekly admissions to the dispensary of the school, which is flooded with patients; and all without charge. Can any other city in the Union afford the same facilities, even if paid for? No, not one. We are sorry to draw comparisons, but it is our honorable privilege and in it can be found no just cause for offense. We took part in the medical regeneration of New Orleans; we were determined that her light should no longer be hidden under a bushel, and our labor shall be ceaseless while we are in the field. She is to be (she is) the medical center of the South. This four short years of labor have made her, and four more will find her the medical center of the Union. This soil is the richest, the seeds have taken root, the tillage is deep, and the harvest is certain.

The faculty of the New Orleans College of Medicine claims priority in the establishment of a chair of Clinical Medicine in the United States. When that claim was questioned, this retort was made in the same editorial:

> But tell us, gentlemen, in what school, previous to our movement, was there a regular chair of medicine? None of the mere bogus titles attached to somebody tacked to a faculty: but, where and who was the professor who did actually labor in this branch, over sick men, with the students at his elbow, every day, and during the whole session?[11]

It is greatly to be regretted that because of the Civil War this flourishing school of medicine had to close its doors.

Although it was reorganized after the declaration of peace between the States, because of the exigencies of the time, the abject poverty of the people of the South, the hectic period of reconstruction and the lack of financial support from the State, the faculty was forced to disband, and the

New Orleans School of Medicine became defunct.

Although there is no medical college to perpetuate the memory of the founders of the New Orleans College of Medicine, although there is no inscription in a magnificent temple of scientific lore to commemorate their achievements, and although the names of these pioneers of medical education are almost forgotten, yet their influence on the progress of medical education not only in the South but throughout the whole United States will endure the ravages of time. The verdict of posterity will be "*Exitus acta probat.*"

THE SECEDING STUDENTS

Long before the first gun was fired at Fort Sumter on April 13, 1861, the rumbling of the approaching war was manifest.

Jealousy, distrust, hatred, and misunderstanding ran rampant throughout the Union. The nation once united by the bonds of fraternity was divided. The activities, bordering on fanaticism, of the abolitionists of the North caused the resentment of the Southerners. A mutual feeling of mistrust had insidiously crept in the homes, schools, business, professions and churches; in fact, wherever men congregated it was the topic of animated discussion. Abuse was heaped by brothers on brothers of the same nation. Patriotism was considered only from the standpoint of sectionalism. The allegiance due the United States by its citizens was divided by the Mason and Dixon line. The country was divided into the North and the South, the slave-holders and the abolitionists. The minds of the citizens of this great country were imbued with the thought of secession even if it would result in war.

The first concerted movement in a Northern city by Southerners to leave for the South, because they were abused and discriminated against, was made by the medical students from Dixie in Philadelphia. The action of these medical students caused a great deal of acrimony and not a little consternation all over the Union, and resulted in criminations and recriminations among the students and faculties of the medical colleges of the North as well as the South. The first inkling of the action of the seceding students was had in New Orleans from the *Daily Picayune* of December 21, 1859. It said:

> ABANDONMENT OF NORTHERN COLLEGE
>
> Philadelphia, December 20: Over four hundred southern medical students are about leaving this and neighboring cities for institutions in the South. It is said the movement is a general one and upon an extensive plan, originating with the Southern Medical Colleges, others say that this movement originated with the students themselves.
>
> SECOND DISPATCH
>
> Philadelphia, December 20: A meeting of Southern Medical students took place in this city last night, and a large number resolved to leave the schools of this city. The Jefferson College loses two hundred students, and the Pennsylvania University one hundred. A large number of them go to the Richmond Medical College: The three hundred leave tomorrow by special train for the South.

An editorial comment of this paper for the following day gives an interesting account of the strained relationship then existing between the North and the South. It reads:

The concerted movement of Southern Medical Students in abandoning the Philadelphia schools, and returning to complete their education in the schools of the South, has its great significance as to the degree in which the Southern feeling, engendered by the recent demonstrations of northern abolitionism is pervading all classes in the South and penetrating into all its relations of business and associations in the North. These young men from various states in the South, respond to what they believe to be the sentiment at home, and put into practice the first large and impressive demonstration of the growing determination at the South, to encourage, by all means possible, a self-sustaining policy in business, in commerce, in manufacture and in education. It is an act which prefigures the adoption of a general policy all over the South, to rid ourselves of the dependence, under which we have languished and the North has grown rich and arrogant, upon Northern storehouses and workshops for everything we use and buy, and the Northern colleges and schools, for the training up of the generation which is, after us, to have the custody of states. It has been done in the heat of a just resentment, in the practical application of a just theory of self-defence against assaults, with which current events menace us. But it was not less true as a general policy, for the peaceful development of the resources and capabilities of the South, for its material growth and for intellectual advancement, when there was no immediate cause for calling it out as a measure of retaliation for wrong, or preparation for unfriendly non-intercourse.

Needless to say that the action of these Southern medical students aroused the ire and resentment not only of the affected medical schools, but as well of the anti-slavery and abolitionist parties. It was the vital question of the day, and it was widely and heatedly discussed in editorials of the great dailies in the country.

The accusation was made by the faculties of the medical colleges of Pennsylvania and of New York that the action of these students was actuated by the medical colleges of the South; that these institutions had employed agents or propagandists to foment dissension in order to draw these young men to their own schools. This imputation was denied by the *Daily Picayune* in the following article:

There never has been any good reason why students from this region of country should have gone North for medical education. There are two institutions in this city, which are amply provided in all their departments with means of instruction not to be surpassed anywhere, plentiful apparatus, learned professors, and thoroughly educated trained men of science and study. This has been growing into knowledge and appreciation of late, so that the number of students is largely increasing each year. Doubtless they will be given new accessions, under the impulse given to proper Southern policy by the excitement of the time, and which whatever be the issue of the pending conflict, will we trust, be incorporated into the permanent policy of the Southern States, as an indispensable element of self-dependence.

The implication might be that the medical colleges of the South have employed agents, or taken some active measures, after the Northern fashion of "drumming" to get custom for themselves. That practice never gained a foothold at the South in any department of business. We can safely say that no Southern institution has made use of such means, and that we know that none have been practiced by either of the institutions here.

Immediately after reading the dispatches mentioned above, the student bodies of the two medical schools of this city met and passed resolutions approving the action of their fellows in Philadelphia, and extended to them a cordial invitation to complete their studies in New Orleans. These resolutions were published in the dailies of this city and were telegraphed to the students from the South at the Northern colleges. These meetings were held on December 22.

Mr. A. R. Gourrier was the chairman, and Mr. W. W. Scott was the Secretary of the meeting held by the students of the New Orleans College of Medicine. The following resolutions were unanimously adopted:

> Whereas, the Southern students of medicine in the Northern colleges, desiring "not to patronize Northern institutions" have asked the Faculty of the New Orleans School of Medicine, on what terms they would receive them for the remainder of the current season (they, the students, having paid for their tickets); and whereas, the Faculty of the New Orleans School of Medicine have replied to them that they will receive them on payment of $5.00 for a matriculation fee, and that those proposing to graduate will pay the graduating fee, $25.00.
>
> Resolved, That we cordially approve the action of our Faculty: That we will cheerfully receive all Southern students leaving Northern schools, and will freely share with them the great advantages with which we are surrounded, and to which we, its class, are entitled:
>
> That a copy of the papers containing the proceedings of this meeting be sent to the medical students in the different Northern schools:
>
> That a telegraphic dispatch be forwarded immediately to those students who have already left or intend to leave the Northern schools, inviting them to accept the facilities of the New Orleans Schools of Medicine gratis.

On that same day the Medical Students of the University of Louisiana unanimously adopted the following resolutions:

Mr. S. J. Luckett was called to the Chair.

> Having heard by late advices from Philadelphia, that a large number of Medical Students attending the Medical Schools of this city have been compelled to withdraw from the same on account of the sectional question which unfortunately divides our common country, and which should not have the least bearing on our glorious profession: Therefore
>
> 1. Be it resolved, That in consideration of the sectional feelings now existing between the Northern and Southern portion of the Union, and the exhibition on the part of the North of hatred toward those institutions which we love and cherish, as the basis upon which our happiness and prosperity depend; and on account of the insults and outrages to which we are ever liable in the North, that we fully approve of the course pursued by our fellow-students of the South in Philadelphia.
>
> 2. That we tender to them our congratulations upon the manner in which they have acted in determining no longer to reside in a community in which there cannot be a feeling of mutual respect and friendship.
>
> 3. That, whereas, under existing circumstances we do not receive, on the part of the North that respect which is due to us as citizens of the United States, it is our duty as men of the South to afford that support to our own able institutions, which, for so long a time has been given to those of the North, to the neglect of our own.
>
> 4. That we appreciate the motives which induced our brothers in the profession to determine to come among us for the prosecution of their studies, and, furthermore, that we extend to them the right hand of fellowship, and good will,

promising them, if fate guide them to the "Crescent City" a welcome greeting; also, assuring them that the facilities to be enjoyed in our institution, if not superior, are at least equal to any on the Western Continent. And we feel ourselves warranted in further assuring them that our high-toned and liberal faculty, as well as ourselves, will know how to receive them.

These resolutions from the medical students of New Orleans added fuel to smoldering embers. The lay press and the medical journals of the North reeked with abuse of the Southern medical colleges. A diatribe resulted therefrom in the medical journals of the North and of the South, and principally in the *North American Medico-Chirurgical Review*, which was published in Philadelphia and was edited by Doctor S. D. Gross, Professor of Surgery in the Jefferson Medical College of Philadelphia, and by Doctor T. G. Richardson, Professor of Anatomy in the Medical Department of the University of Louisiana, and the *New Orleans Medical News and Hospital Gazette* published by Doctor Warren Brickell, Professor of Obstetrics, and by Doctor E. D. Fenner, Professor of Theory and Practice in the New Orleans College of Medicine.

The following editorial in the issue of January, 1860, of the *North American Medico-Chirurgical Review* gives us an interesting report of what transpired in Philadelphia, it reads:

> EXODUS OF SOUTHERN MEDICAL STUDENTS.—For some time past much excitement has existed among some of the Southern Medical Students of this city, growing out, as has been alleged, of the Harper's Ferry movement. It has been vaguely rumored that a committee of thirty had been appointed early in the last month to obtain signatures to a pledge of secession; and on Tuesday morning, December twentieth, a final meeting was held in the Assembly Building rooms, preparatory to the exodus of the disaffected members of the classes of the different schools. The president of the meeting, we learn, was Mr. Lee, of Alabama, assisted by several vice-presidents and secretaries. Addresses were made on the occasion, among others, by Doctor F. E. Luckett and Doctor H. H. McGuire; and letters and telegraphic dispatches read from Governor Wise of Virginia, and the deans of the medical schools of Richmond, Charleston, Savannah, Augusta, New Orleans and Nashville, tendering sympathy, and a cordial welcome to such secessionists as might feel inclined to resort to those institutions. The meeting is said to have been conducted with great decorum. The time fixed upon for their departure from the city was Wednesday night, December twenty-first, with free passes provided by the Fredericksburg and Richmond Railroad, through Doctors Luckett and McGuire, over the whole route, and one thousand dollars, said to have been sent from Virginia, to defray incidental expenses.
>
> The number of students that left has been variously estimated at from one to two hundred, a large majority of whom were matriculates of the Jefferson College. It is understood that they were joined at the depot by a small number of Southern students from the University of New York. The exodus was avowedly conducted by Doctors Luckett and McGuire, the former of whom had been intrusted with the railroad passes and the disbursement of the money. It is proper to add that these gentlemen had a large quizzing class, consisting of nearly two hundred Southern students, and generally known as the "Southern quizzing class." Of this class the great majority have left; and the whole number of secessionists, one hundred, it is said, had previously been pledged to the medical school of Richmond. The manner in

which the secessionists were received at Richmond will appear by the following dispatch, copied from one of the daily journals of this city:

RECEPTION OF THE SOUTHERN MEDICAL STUDENTS AT RICHMOND, VA.

Richmond, Va., December 22. The seceding medical students from Philadelphia arrived here to-day, and were received by the faculty and students of the Medical College, the Governor's guard, and an immense throng of citizens. The procession marched to the Governor's mansion, where the students were addressed by Governor Wise, and afterwards by Professor Gibson, at the college. A dinner was then partaken at the Columbia Hotel.

The students were received with great enthusiasm by our citizens, and as the procession passed through the streets the shouts of the men were deafening, while the ladies manifested their delight by the waving of their handkerchiefs.

The objects of the secessionists are best explained in the language of the preamble and resolutions adopted at the meeting at the Assembly Building rooms, on the twentieth instant:

Whereas, We have left our homes and congregated in this city, with a view to prosecute our medical studies; and having become fully convinced that we have erred in taking this step; that our means should have been expended, and our protection afforded to the maintenance and advancement of institutions existing in our sections, and fostered by our own people:—

Resolved, That in a body, or as many as approved of the act, we secede from the institutions in which we have severally matriculated, return to the South, and herein pledge ourselves to devote our future lives and best efforts to the protection of our common interests.

Resolved, That in taking this step, we disclaim any personal animosities, and deprecate any political agitation.

Resolved, That we tender our grateful acknowledgments and heartfelt thanks to the Hon. Henry A. Wise, Governor of Virginia; Dr. L. S. Joynes, Dean of the Virginia Medical College at Richmond; Henry R. Frost, Dean of the Medical Department of the University of South Carolina; to President Robinson, of the Philadelphia, Wilmington and Baltimore Railroad, and all others who have extended to us the substantial encouragement and aid so essential to the furtherance and successful accomplishment of our enterprise.

Resolved, That we extend a cordial invitation, and will cheerfully welcome in the South, any Northern students who will subscribe to the previous resolutions.

Resolved, That a copy of these proceedings be sent to all the Northern medical colleges, for the benefit of Southern students who may have matriculated in them.

Resolved, That the Southern papers generally, be requested to publish the proceedings of this convention.

We have given the above statements of this proceeding as they have been communicated to us, as matters of interest to the medical profession of the United States in all time to come. As faithful journalists it is our duty to chronicle the event, and to express our profound regret at its occurrence. Various rumors are afloat in this city, both in the profession and in the community generally, as to the origin of this movement and those who played the chief part in its execution; but as we ourselves have no authentic data to guide us, we shall, for the present, forbear any further comments.

In the next issue of that same journal was published the following statement:

In the article of our journal, above referred to [January, 1860] we included the schools at New Orleans as among those that had opened their arms to the disaffected students. It is due, however, to the University of Louisiana to say, that she stood entirely aloof from any participation in the movement. We make this statement upon the assertion of our colleague, Dr. Richardson, the Professor of Anatomy of that institution, who declares that the whole faculty were opposed to the proceeding and that no dispatch, or communication of any kind was sent by them to this city either before, during, or after the stampede.

The *New Orleans Medical News and Hospital Gazette* strenuously objected to that statement in a caustic editorial which appeared in its issue of April 1860; it said in part:

> There is within us a sense of pride which may prompt us to treat with sovereign contempt an indirect attack on our personal status in society; but the slightest inuendo directed against the noble institution to which we are attached, as teacher, and for the permanent establishment of which we have so long, so faithfully, and so honestly laboured, shall never pass unnoticed while we have its interest at heart and can write clearly enough for the compositor to read our manuscript.
>
> We had hopes that every medical journal north of the Mason and Dixon's line, which had had its worse suspicions aroused by the voluntary secession of medical students from Philadelphia and New York, had ere this vented its fullest measure of spleen against Southern Medical Colleges, and leave the leaven to its own work. But the March, 1860, number of the *North American Medico-Chirurgical Review*, stirs the pool again, and with a gusto tells us plainly of supremacy of self over all consideration whatever. . . .
>
> Now, if we have a reader who thinks that our remarks are intended to excuse the New Orleans School of Medicine for the action she has taken in this secession movement, that reader knows not the material of which we are composed. We write to show that our institution stands on an eminence from which she can, and does, look down on all who directly and indirectly asperse her character; we write to prove that the charges made against her, directly and indirectly, have no shadow of foundation in truth; we write to show that the North American Medico-Chirurgical Review has never given a true history of the secession movement; and we write to show this same Review, that in the maxim we have adopted at the head of this article* it may find food for reflection. The simple credulity it has evinced proves that its mother never mentioned to it the true old proverb: "All's not gold that glitters."
>
> 1st then: The only connection the New Orleans School of Medicine ever has had with the seceding students of the north was in her receiving a dispatch from New York City, signed by the "Alabama Committee" saying that the southern students contemplated leaving New York, that they had paid for their tickets, and desiring to know on what terms she would receive them; to which dispatch the Faculty sent the following reply:
>
> The Faculty of the New Orleans College of Medicine deeply regret that you have found yourselves under the necessity of leaving the school to which you are attached. They will receive you on condition that you pay for matriculation and graduation fees.
>
> 2nd. The Faculty of the New Orleans School of Medicine have never had, at any time, any communication, of any kind whatsoever, with any student of medicine attached to or seceding from any school in Philadelphia; and we now demand of the *North American Medico-Chirurgical Review* proof to the contrary—not heresay proof, but proof positive. . . .
>
> Is the *Review* silly enough to believe that the classes of the schools here or elsewhere, could thus freely throw open the doors of the institutions without the positive approbation of the respective

* An open foe may prove a curse
But a pretended friend is worse.—Gay

> Faculties, or if the classes did act thus independently of the Faculties (said Faculties being opposed to the proceedings), does not the Review think it a solemn duty of said Faculties to as publicly express their disapprobation of the course pursued?
>
> Has the *Review* been informed which of the Faculties of this city, "opened their arms," embraced and graduated the one seceding student who found his way to New Orleans? Or does the *Review* think that a Faculty opposed to the proceedings would only have been acting consistently in declining to admit the seceder?
>
> Would it not be well for the *Review*, since it aspires to writing a history of the secession movement, and a history is worse than flat, if falsified, to send special messengers on to the various cities it has named, and collect at least a few substantial facts? Its present position is a most unenviable one, for all impartial, truth-loving readers (if it ever does publish the facts) are sure to condemn its course.

The editorial emphatically denied that telegraphic dispatches emanating from the Dean of the New Orleans College of Medicine, were read at the meeting of the seceding students in Philadelphia, on December 20. It further asserted that by printing such statements based on vague rumors "it evinces a disregard for others which admits of an interpretation by no means flattering to itself."

"Once more we say, we do not shed ink to excuse the New Orleans School of Medicine for what she has done." The editorial ends:

> She has acted openly; we think she acted properly; and she would act again in the same manner. She will never tacitly sanction an act of her pupils to which she is even indirectly opposed; she will do before the whole world what she will do in New Orleans; she will truckle to no man's reputation; and while she is ever ready to meet the 'open foe,' she condemns the little moles that, under the earth and in the dark, vainly struggle to sap her deep laid foundation.

In its issue of May, 1860, the *Review* replied as follows:

> They declare,* not in so many words, it is true, but by implication, that they are ready to die in defence of their noble institution, the establishment of which has cost them so much labor, and anxiety, and treasure, and that they will permit no one to cast any imputation, even of the most indirect character. All this is very right and just, and valiant. Keep your school pure and chaste before the public and the medical profession. Let her be, like Caesar's wife, above suspicion. To all such sentiments we cordially subscribe. But why, gentlemen, are you abusing the Review, and calling it by hard names: In the article to which you have taken such exception, the great sin which we committed, in your immaculate eyes, was that we did not include you in the same category as the University of Louisiana, in her disclaimer, made through our colleague, Professor Richardson, respecting her supposed interference in the late stampede in this city. It is here that the shoe pinches, "hinc illae lachrymae." We should have been rejoiced if we could extend to your school a similar courtesy. But we could not; for, although we were not able to assert, from any official documents in our possession, that you sent any telegraphic communications to the medical students of this city, "tendering sympathy and a cordial welcome to your school," yet we were perfectly sure that you had sent a dispatch to New York, and we had, therefore, a right to assume that you would have been very glad to perform a similar service for the Philadelphia students if they had addressed you upon the sub-

---

* Editors, *New Orleans Medical News and Hospital Gazette*.

ject, which, however, judging from your silence, we conclude they never did. But be this as it may, our ethics are that when a man does a wrong, he is equally guilty whether he commits the wrong in one place or in another, upon one person or another. The fact that the Faculty of the New Orleans School of Medicine sent a dispatch to New York induces us to exclude her from the benefit of the exculpation which we so gladly extend to the University of Louisiana.

Personally, we have no preference for either institution; we have kind friends in both, and we wish them both well; but we could not, we must confess, place them upon the same footing in a matter in which one was observing a dignified silence, and the other catering to public excitement.

The episode of the seceding students was soon forgotten. The ominous shadows of war hovered over a whole nation. The fear of an impending catastrophe gripped the hearts even of the most optimistic. It pervaded the souls of men in every status of society in the North as well as in the South. Even the disciples of the healing art, whose lives were dedicated to the alleviation of human suffering, foreboded a dismal future. This presentiment on the part of the profession was expressed in an editorial in the *New Orleans Medical News and Hospital Gazette* for the month of January, 1861, which augured the catastrophe which was soon to engulf the whole nation. It reads:

> For the first time in life, we look onto the New Year with forebodings of all but good. To our patrons, then, we certainly wish "a happy new year"; but the wish is clouded with the impossible conviction that it is scarcely in the range of probability that in this land of ours there will, in the space of a few short months, be a single happy individual. Prosperity preachers and politicians have combined to madden our people, until there seems scarcely a shadow of hope that we shall avoid suicide in its worst form.
>
> We pray that our worst fears may soon vanish into thin air, and our still lingering hope for the continuance of our Union be realized.

REFERENCES

1. *New Orleans M. & S. J.*, p. 340 (May) 1861.
2. *Commercial Bulletin*, March 28, 1838.
3. *New Orleans M. & S. J.*, January, 1846.
4. *New Orleans M. & S. J.* (Jan.) 1848.
5. *Philadelphia Med. Examiner* (Sept.) 1848.
6. *New Orleans M. & S. J.* (May) 1850.
7. *New Orleans M. & S. J.*, p. 341 (May) 1861.
8. *New Orleans Med. News & Hosp. Gaz.* p. 620 (Dec. 1) 1856.
9. *New Orleans Med. News & Hosp. Gaz.* p. 558 (Oct. 1) 1857.
10. *New Orleans M. & S. J.* p. 689 (Dec.) 1858.
11. *New Orleans Med. News & Hosp. Gaz.*, p. 698 (Nov.) 1860.

EUROPEAN ANATOMY BEFORE VESALIUS

By WILFRID TAYLOR DEMPSTER, SC.D.

ANN ARBOR, MICH.

PART II*

ANATOMISTS AT BOLOGNA

Although the methods were simple and dissections crude, a few men acquired fame through their anatomical studies. Toward the latter part of the thirteenth century William of Saliceto (died 1280) wrote an anatomy which was designed to teach surgeons the anatomy essential to their operations. The anatomy of William of Saliceto was the first during the Middle Ages to be incorporated into a surgical treatise, an innovation not found in the earlier surgery texts of Brunus and Theodoricus. The text, which was about the same length as the later Salernitan anatomies, resembled these further in that the work covered essentially the same material, added no new knowledge and transmitted traditional errors in statement. It was an anatomy based on animal dissection and, though there is evidence that William performed at least one autopsy, it gave but the slightest evidence of knowledge derived from human dissection; it was written in such a way, however, as to be of value in the teaching of surgeons. In the treatment and emphasis on material, the work differed from the older anatomies. The work was in reality a topographical surgical anatomy in which the five sub-sections dealt with the head and neck, the upper extremities, the thorax, the abdomen, and the pelvis and lower extremities. The physiological relationships, although concisely treated, became the principal subject matter to which were added occasional remarks on such subjects of surgical interest as operative incisions, luxations and hernias.

Taddeus Alderotti (died 1303) a contemporary of William at the Bologna school, and his students, Mondino de Luzzi (died 1326) and Henri de Mondeville (died 1320), gained attention for their knowledge of human anatomy. Henri de Mondeville was apparently the earliest anatomist to use charts in his teaching and although these are no longer extant, several miniature manuscript illustrations of them have persisted and they show the method of dissection although little else.

His textbook of surgery, which was as large as some of the surgical texts used in our medical schools today, has an introductory section of approximately 25,000 words dealing with anatomy. The earlier pages of this were concerned with the definition and classification of the organs of the body based upon the hard or soft, dry or moist, hot or cold, and flexible or inflexible characteristics of the parts. This portion of the work treated of bone, cartilage, nerves, veins, flesh, fat, skin and other elements of wide distribution in the body. It is of interest to note that there were thought to be in the body 202 bones, 53 muscles and 75 nerves of which seven pairs arose from the brain and the remainder, of which one was unpaired, were from the cord.

---

* Part I appeared in the July issue of ANNALS OF MEDICAL HISTORY, n.s. 6:307, 1934.

Not only were the general characters listed, but teleological reasons for the creation of the structures were suggested. As an example we find that the ligaments were designed, first, to join the different bones, second, to take part with the nerves in composition of muscles and cords, third, to serve in the articulation as a covering or protection for certain nerves, and fourth, to suspend certain viscera such as the uterus.

Following the introductory chapter the work proceeded to the head and neck, the shoulder, arm, thorax, abdominal and pelvic viscera, hips, generative organs, thighs and legs. Some later writers such as Guy de Chauliac and Brunschwig followed a similar arrangement in their surgeries, though with some textual changes. The method of treatment was that of a textbook, formalized and didactic, the subject matter collated from Galen, Ibn Sina, 'Ali Ibn 'Abbas and Aristotle. Though the miniature manuscript illustrations suggest that the author had dissected, there is no reference in the text relative to the practice.

As a random example of de Mondeville's writing we may refer to the section which concerns the anatomy of the breasts. These structures . . .

> . . . are formed of numerous nerves, veins, arteries and of soft white glandular and spongy flesh. The reasons for the creation of the breasts were three in number: first, to augment by their thickness the natural heat and the digestion of spirit; second, to protect the organs of the thorax; third, (a reason which concerns only the breasts of the female), for the generation of milk. It was, in effect, necessary that the new-born infant should be nourished by food little different from that provided in the uterus, and it was necessary that it be a food easily digested because of the feeble nature of the infant. Accordingly, there were created in the breast numerous cavities filled with soft white flesh in which the milk is formed. The reasons for the location of the breasts in woman on the chest, when most often in other animals they are elsewhere, are three in number: first, the chest is a distinguished, noble and honest place and thus they were able to be shown honestly; second, warmed by the heart they reflect its heat so that this organ reinforced itself; third, (applied to large breasts only) they cover the chest and thus warm, cover and strengthen the stomach.
>
> To the breasts of the female are given many veins which carry from the uterus, the menstrual blood, which their digestive properties change from a red color to white so that it should resemble the color of the breasts, in the same manner that the chyle returning from the stomach to the liver changes to the red color of the liver. As the milk is necessarily white since it is a complement of the nutrition of the breasts which are white, it is necessary that the nutriment of the

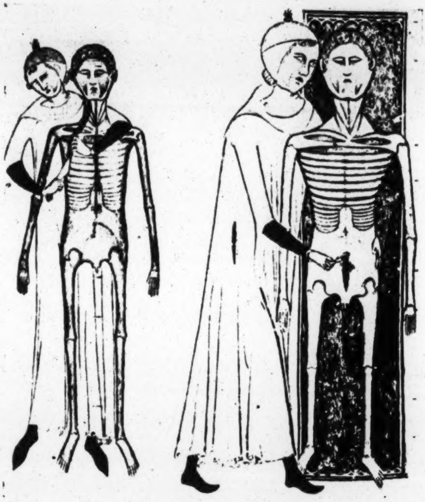

FIG. 2. TWO STAGES OF A DISSECTION FROM DA VIGEVANO MANUSCRIPT (MS. 569 CHANTILLY) OF 1345. (FROM WICKERSHEIMER.[56])

breasts should be white also, since the nourishment of a part is accomplished by a similar nourishing agent.*

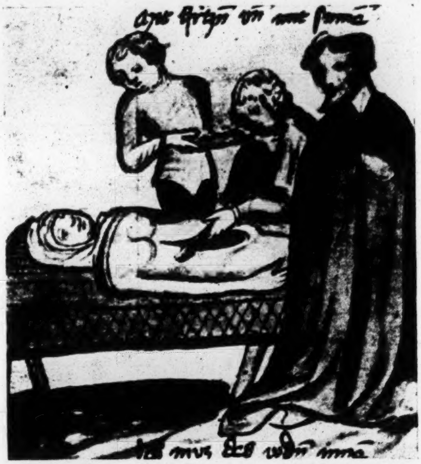

Fig. 3. Dissection Scene from a Manuscript of World History of Rudolph of Ems from End of Fourteenth Century. (From Sudhoff.[52])

We notice from de Mondeville's discussion the same teleological background, the same reasoning from analogy and the same dogmatic characteristics that we found in the writings of the Salernitan physicians. In arrangement, content and style, the work is essentially a summary of Arabian writing as it appeared, for instance, in 'Ali Ibn 'Abbas, al-Razi or Ibn Sina. The work, however, together with that of Mondino, which will be considered shortly, represents the status of anatomy at the beginning of the fourteenth century. Descriptions were more extensive than the earlier writings though they were equally concise; the classification of structures was more rigorous and the terms were better defined. De Mondeville's anatomy passed through a number of manuscript editions in the fourteenth century, and its influence was evident as late as the sixteenth century. Mondino's work, however, came to surpass it in popularity, except perhaps in France.

MONDINO'S ANATOMY

Mondino's work was slightly longer than de Mondeville's anatomical section and was not incorporated in a surgical treatise. It was copied frequently and has appeared in several editions since the development of printing; in fact, it became the standard guide to anatomy (along with the dissecting manuals: "De interioribus" and "De juvamentis membranorum" of Galen) for two hundred and more years after it was written. The book was a dissecting manual and surgical anatomy text combined, which, judging from the classification and method of presenting observations, appears to have been written as the amplification of a set of lecture notes from a specific dissection. It was the first work to outline both the order and method of a human dissection which at this time usually occupied four succeeding days of intensive work. In order to avoid their putrefaction, the abdominal organs were dissected first, the sequence of dissection in this region being: abdominal wall, omentum, gastrointestinal tract, spleen, liver, gall bladder, kidneys, bladder and the organs of the female and male generative tracts. The study of the thorax which was next was followed by dissection of the mouth and neck. The cranium, meninges, brain, the eye, cranial nerves and base of the skull followed. A brief consideration of the veins and bones of the extremities completed the text. The muscles of the extremities, however, were not discussed; this omission from the work may be accounted for since these structures had been treated in a previous demonstration from specimens which had been desiccated in the sun.

---

* Translated from the French of Nicaise[30] and the German of Pankow, Herda and Alban.[20]

As the anatomy proceeded from organ to organ a conscious effort, which was fairly well maintained, was made to discuss the position, consistency, structure, size, shape, number and connections of each organ together with remarks on function. This is shown, for instance, in the discussion on the bladder:

> You will see that they [the ureters] terminate in the bladder near the middle and do not perforate by a single large foramen but by small and oblique foramina passing between the coats or between the coat and the covering, and the design of this is that when the bladder is filled with urine, the urine may not return to the kidneys, and the more of it is filled the more the foramina are closed, because the one coat is pressed upon another or upon the covering. Open the bladder, then, and you will see its great cavity, which is nervous. You also see then the fleshy and muscular neck through which, at the proper time and when a man wishes, he expels urine and when necessary retains it. And because its neck is muscular [probably referring to the prostate] if the bladder be cut in the neck it can be consolidated, if in the body it cannot. The neck is perforated by a small opening through which urine is expelled to the canal of the penis, as you can see. And so appears the quantity of the bladder itself, its location, its connections, number, substance and function.

The practical nature of the work is suggested by the remainder of the discussion of the bladder:

> It may be affected by disease of all kinds, but especially with one which is called lithiasis. For in its cavity, stone can be generated from the mucilaginous humor gathered in it and condensed by superfluous heat, and this stone is cured by being dissolved or by incision. Now this stone, the man being properly placed, should be conducted to the neck of the bladder by a finger passed through the anus, the other hand being placed over the pecten, and held there while an incision should be made into the neck, and violently extracted with a trajectorium, and this if the stone be large. But if it be small, so that it can be extracted through the cavity of the penis, it should be conducted from the neck of the bladder to the penis by compression made by the finger, and if it does not pass out it should be extracted with a small trajectorium.

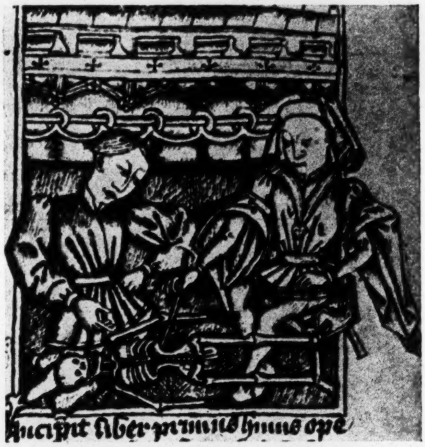

FIG. 4. ANATOMICAL DEMONSTRATION FROM THE BRISTOL MANUSCRIPT OF GUY DE CHAULIAC, ABOUT 1430. (FROM SINGER.[46])

The clinical viewpoint was further shown in passages dealing with colic, hernia and abdominal paracentesis. In one place a peculiar surgical practice is mentioned:

> To join the lips of wounds of the intestine, you should have large ants, and, after making them bite the conjoined lips of the wound, decapitate them instantly and continue until the lips remain

in apposition; and then return the gut as before; this done, proceed to the cure of the belly wound.*

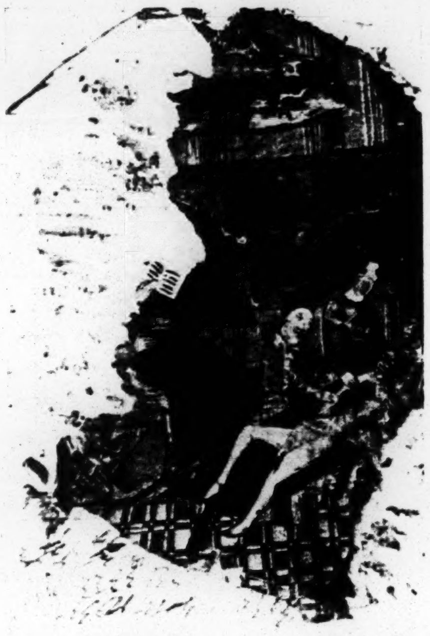

FIG. 5. THORACIC CAVITY OF MALE CADAVER BEING OPENED BY THREE STUDENTS WHILE PROFESSOR, WHOSE HANDS AND BOOK SHOW AT LEFT OF ILLUSTRATION, READS. FIGURE APPEARED IN MANUSCRIPT OF GUY DE CHAULIAC (MS. FRANCAIS 396 IN PARIS). (FROM SUDHOFF.[52])

Mondino gave evidence in his work of having dissected practically every region he described. He was familiar with the anatomy of the pig and occasionally he compared the structure of the quadruped and the human. Certain characteristics of the pig, however (the superficially five-lobed liver, the bicornuate uterus with its cervix undifferentiated from the vagina and the external pudendal blood supply to the mammary gland), were described as human characteristics. Likewise, obvious inaccuracies from the anatomical tradition of the time, such as a heart with a middle ventricle in the walls of the interventricular septum, an accessory bile duct to the stomach, and a seven-chambered uterine cavity are treated as fact.* The descriptions of certain organs such as the larynx, ear and base of the skull were confused. The anatomy, however, described certain structures better than had been done up to this time. This was true of the abdominal wall and of the pregnant uterus. The significant feature of Mondino's work was not so much its content as its form. It was the first anatomy which applied distinctly to the human.

Mondino quoted a number of older writers, principally Galen, Ibn Sina, Ibn Rushd (Averroes, died 1187), al-Razi, Hippocrates and Aristotle. Galen was of course the principal source. Although these were quoted as authorities of much weight, it is noticeable that the references pertained on the whole not to structure, but to functional notes, disease characteristics or philosophical speculation on the causes of the structural characters. In several places the conflicting physiological viewpoints of Galen and Aristotle were compromised.

The terminology was essentially like that of the previous anatomies, predominantly Latin but containing such Arabian terms as *mirach* (abdominal wall), *siphac* (parietal peritoneum), *zirbus* (omentum), *alchatim* (pelvis), and *meri* (esophagus).

The traditional viewpoint of the humoral physiology was maintained and scholastic attempts to find teleological reasons for organs being shaped or arranged as they are, were manifest throughout.

---

* Quoted from Pilcher.[32]

* De Mondeville had represented similar views; the uterus, however, having but two cavities, he considered that the neck of the uterus (the vagina) together with its othe: functions was a urinary passage.

Mondino's work showed a thoroughgoing recasting of anatomical knowledge to fit the human cadaver, and procedure and methods of dissection were outlined. The convenience and practical nature of the work made it the standard anatomical text even as late as the sixteenth century.

Anatomy after Mondino

Among Mondino's contemporaries and immediate successors were Bartolomeo da Varignana (died 1318), Niccolo Bertrucce (died 1347), Guido da Vigevano (died c.1345), Guy de Chauliac (died 1370), Niccolo Falcucci (died 1412) and Tommaso de Garbo. These men are known to us chiefly through surgical manuscripts which they had written. Guy de Chauliac's great surgery was probably the best known. The anatomical section of this was molded on the pattern of de Mondeville's anatomy. Da Vigevano's anatomy consisted of sixteen illustrations of different stages in a dissection together with short explanatory legends. In a sense it might be considered as an early atlas of dissection, accompanied by a short explanatory text.

Others in this period had dealt with anatomy, though not in the technical sense. The optical works of Witelo the Pole (died 1279), of Johann Peckham (died 1292), and of Roger Bacon (died 1294) were concerned to a certain extent with the anatomy of the eye. Their comments on the structure of the eye, however, were essentially duplications of the Arabian ideas. Anatomical matters were likewise treated in the extensive writings of Albertus Magnus and Giles of Rome (died 1316).

Anatomical demonstrations during the fourteenth century and, in fact, until the sixteenth, had become formalized and the activities of anatomists were directed to the literature rather than to dissection. In the various schools in Europe, a demonstration meant primarily a reading of Mondino, Ibn Sina, or Galen accompanied by a dissection. The professor was the center of attention as he read from an elevated pulpit, his book safely protected by distance from the smears of cadaver grease. An assistant,* the ostensor, directed the dissection which was performed by a menial who made incisions and handled the organs. The method of conducting demonstrations precluded any advance in anatomical knowledge, and emphasized the domination and authority of the older writers.

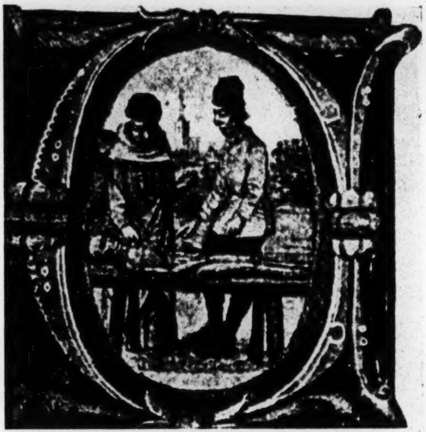

Fig. 6. Illuminated Capital from Provincial Manuscript in Vatican Library (Codex Vaticanus Palatinus 4804) Showing Graveyard Dissection of an Exhumed Body. (From Sudhoff.[52])

An anatomical session was a spectacular event occurring only a few times a year. Some of these, however, the public demonstrations, were occasionally performed for the edification of practicing surgeons and medical men and possibly others also who were influential personages in the community. It was not until the sixteenth century that the character of demonstrations changed and anatomists themselves began actually to dissect.

---

* The names of two of Mondino's assistants, Alessandra Gilium, a young woman, and Otto Agenius, are known to us.

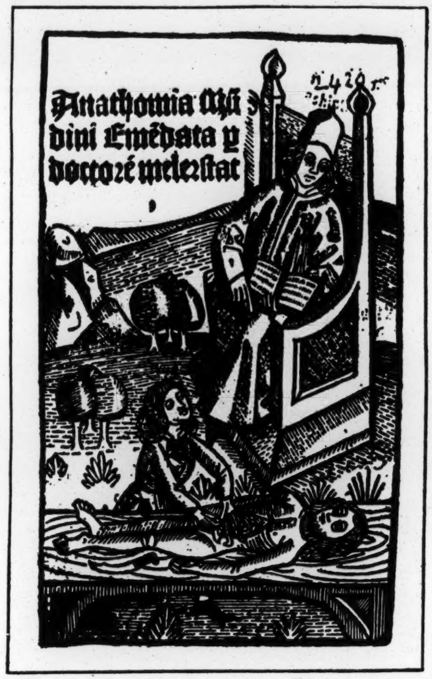

Fig. 7. Illustration of a Dissection from Melerstat Edition of Mondino, Leipzig, 1493.

During this period it will be remembered, however, that dissections though sporadic were not unknown procedures at dozens of universities and hospitals in Europe. Interest was attracted away from the cadaver and focused on the philosophical and physiological notions of the time. As the translations of Greek and Arabic works became more widely distributed in Europe during the fourteenth and fifteenth centuries, particularly the newer translations from the original Greek rather than from Arabian sources, it was found that the authorities differed among themselves. Galen, Ibn Sina and Aristotle frequently varied in their viewpoints on function and structure. Scholars of the times either attempted to read between the lines of conflicting authors and to settle differences by argument and dialectic or became out-and-out adherents of one master or another. It never occurred to these men that recourse to observation might have solved many difficulties. This tendency, together with the influence of the all-embracing philosophical systems of the Middle Ages, to the extent that even church philosophy was affected, was a factor which hindered the investigation of natural phenomena. Biological facts were thus surrounded by philosophical speculation particularly by Christian church philosophy, by vitalistic Aristotelianism, by the theistic determinism of Galen and by the philosophy of Ibn Sina which was an Arabized Aristotelianism combined with Neo-Platonism and Moslem theology. Interest in anatomy, thus focused on the philosophical aspect of the subject rather than on observation, resulted in the merest vestige of progress.

A few anatomists of the fifteenth century are known, such as Ugo da Sienna (died 1439), professor at Padua and Ferrara, Jean de Concorregio (fl. c. 1435), Bartolommeo da Montagnana (fl. 1470), professor at Padua, Coetaneo del Montagnana, professor at Bologna, Giammateo Ferrari da Gradi (died 1472), professor at Pavia, Marc Antonio della Torre, professor at Pavia and Padua, and Allessandro Benedetti (died 1525) of Padua, but their activities were little advanced over the older works. They differed from Mondino and his contemporaries, principally in their more profound knowledge of Arabian and Greek sources. A purification of the etymology of many technical terms was a result of such studies.

PRINTED BOOKS

If we view the renaissance period particularly during the fifteenth century, we notice two factors, the ramifications of which were later to benefit anatomical studies. These were the invention of printing and the artistic Renaissance.

In the fifth and sixth decades of the fifteenth century, a new process, printing with movable type, was developed in Germany and a few books such as the famous Gutenburg Bible were published at this time. Printing, at first a secret attempt to imitate all the characteristics of the copied manuscript, was soon to supplant the expensive hand-copied books. Within forty years or so from the time of the first printed works, publishing houses came to be located in thirty or more of the principal towns of Europe. One edition after another of the more standard texts appeared so that by the sixteenth century some thousands of editions had been printed. Many of these were duplicate editions which had been ordinarily limited to less than three hundred copies because of the softness of the type. The earliest medical works appeared in printed form in the late sixties and early seventies of the century although almanacs and pseudomedical tracts had appeared before this time. An edition of Mondino came out in 1478 and was followed in the next quarter century by several others. The medical incunabula of the last third of the century numbered in the hundreds. Of these, the later works were sometimes illustrated with wood block plates. It is obvious that the development of means for the dissemination of knowledge such as printed tools provided would stimulate anatomists and other scholars to activity. We shall return to a consideration of this.

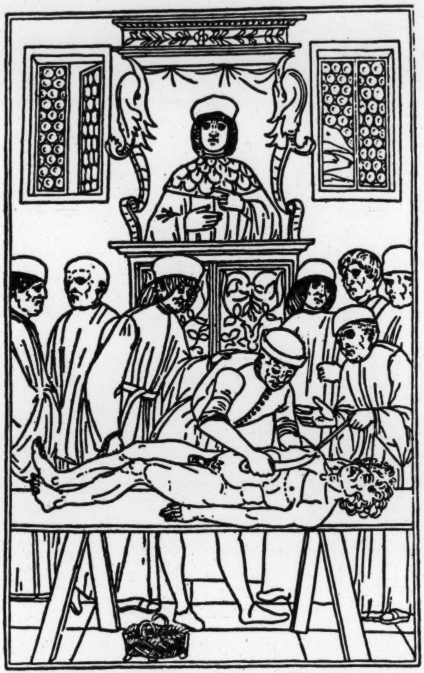

FIG. 8. FIRST PAGE OF ITALIAN TRANSLATION OF MONDINO FROM FASCICULA DI MEDICINA PRINTED AT VENICE IN 1493.

ARTIST-ANATOMISTS

While the progress of anatomy was somewhat retarded following Mondino, tremendous advances were made in other fields. Only one of these need concern us here. Painting and sculpture, it will be remembered, were highly conventionalized activities during the early Middle Ages, but since artistic expression served as a pleasant and efficient method of furthering religious interests, it was encouraged by the church. Talented men, particularly in Italy, painted, carved and experimented with the technique of their professions.

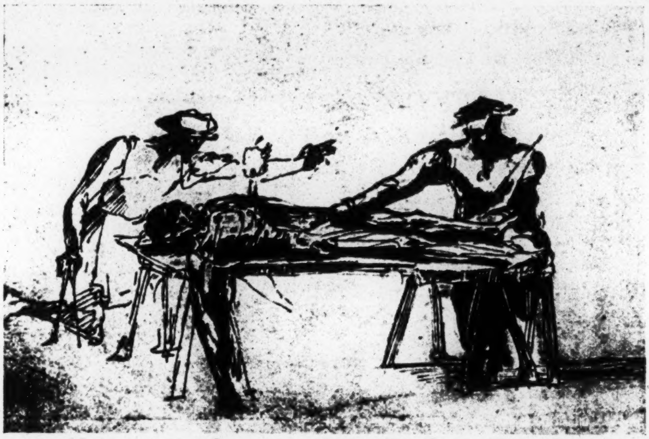

Fig. 9. Sketch by Michaelangelo Showing an Artist Dissection. (From Duval and Guyer.[14])

As the art of the Renaissance progressed, the subject matter of the artist became broader, and a group of artists, the naturalistic school, broke away from conventionalized methods of artistic expression and attempted to depict vivid living stories. This meant the artist must be master of composition, color, chiaroscuro, design, perspective and the fundamentals of illusion. More than these he needed to know his principal subject, man. The study of human proportions and of the nude model in activity resulted in such advances in realistic art that more intensive investigation of human anatomy was a natural consequence. Giotto di Bondone (died 1337) and his students represented the earliest phases in the naturalistic movement, which in the fifteenth century was to be further characterized by artist dissections.

Artists witnessed medical dissections when opportunities allowed; some themselves dissected bodies either under supervision of a hospital or in the quiet of the night behind closed doors. Among those who, in the words of Ruskin, "polluted their work with the science of the sepulchre," were Andrea Botticelli (died 1510), Domenico Venegiano, Donatello (died 1466), who made the first nude statue of the Renaissance, Verrochio (died 1489), Pollaiuolo (died 1498) one of the first to make systematic dissections, Michaelangelo (died 1564); Raphael and del Rossi were assiduous students of plastic anatomy. Ecorchés or statues showing muscles have persisted to the present and suggest the dynamic viewpoint of the anatomical studies of Donatello, Bandinello and Michaelangelo. Such models were extensively studied by students and it seems likely that anatomy studied from models, if not from actual dissections, was a required part of the training of young artists of the Renaissance. In Germany, Albrecht Dürer carried out studies in plastic anatomy and some sketches of his, together with copies of Leonardo da Vinci's drawings on nerves of the arms, indicate that his interest extended beyond surface studies.

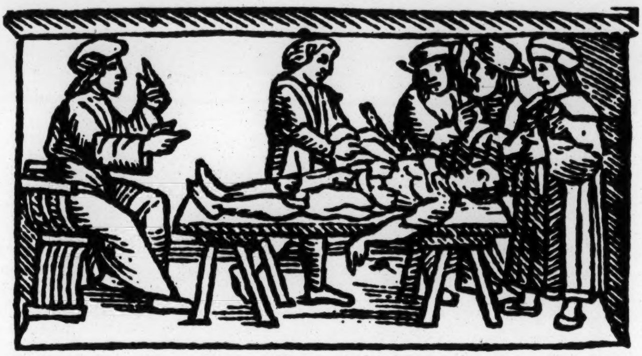

FIG. 10. PORTION OF TITLE PAGE OF BERENGARIO'S COMMENTARY ON MONDINO, 1521.

The interest of the artist-anatomists, however, was centered in their creative works rather than in anatomy; consequently, plastic anatomy was practiced only insofar as it was an adjunct to purely artistic studies. Apart from references to human proportions in an occasional treatise on painting, little of the artist's anatomy was given literary form. The artist, however, in contrast to the medical anatomist, brought to the dissection a mind free from traditional bias, and brain and eye trained for careful personal observation. He avoided the display and formalism of the school demonstration and handled the scalpel for himself. He taught the public the importance of anatomy through the realism of his paintings and his influence on anatomical practice was due both to his enthusiasm and, in the sixteenth century, to his preparation of accurate illustrations for the publications of professional anatomists.

ANATOMICAL WORK OF LEONARDO DA VINCI

Leonardo da Vinci (died 1519) began to study anatomy in the way his fellow artists did, his early interest centering on the proportions of the body. He collaborated, in fact, with Luca Pacioli in a work written in 1497 called "De divina proportione." The last decades of Leonardo's life were intermittently devoted to anatomical activities in which more than thirty bodies were subjected to dissection, an experience which exceeded in time and paralleled in extent that of Vesalius a half century later. During the period of his anatomical studies, his artistic endeavors were limited to very few works, albeit his masterpieces: the Last Supper, the Mona Lisa and the Sforza Monument.

Leonardo's anatomical work is known to us through his notebooks which at the time of his death numbered a hundred and twenty folios. These sketches and notes which were considered as mere curios of antiquarian interest passed through the hands of numerous wealthy collectors who rearranged them according to the beauty of the sketches. After three centuries the folios began to accumulate in several of the great libraries of England, France, and Italy where they still remain. Many (about 300) of the several thousand folio sheets which persist deal with anatomical studies, the other sheets being devoted to animal, mechanical and mathematical investigations.

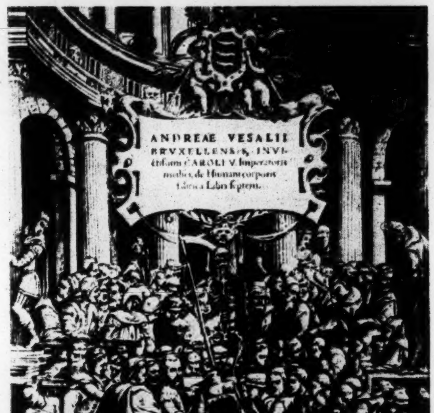

Fig. 11. Anatomical Demonstration Illustrating Title Page of Vesalius' Fabrica, 1543.

Leonardo's sketches and notes were not published until fifty years ago and his studies accordingly did not attract attention until they were obsolete. A few contemporaries had seen the notebooks but these, with the exception of Marc Antonio della Torre, were not anatomists. In the period before the manuscripts were published, however, Blumenbach and John Hunter* had seen them and remarked about their excellence, but by this time scientific anatomy had progressed beyond Leonardo. Although Leonardo thus had little effect on anatomy, his work serves as a criterion for evaluatting his contemporaries and immediate successors.

The notebooks consisted of folio sheets with red chalk and line drawings, usually several to a page with notes interposed. There was little order to the subjects treated though each page generally recorded one or more distinct observations. Inconsistencies were frequent between earlier and later notations regarding the same structure, which indicated Leonardo's increasing capacity as an independent investigator.

Leonardo seems to have used models, sections and wax castings of cavities in his studies. He attempted measurements of viscera, such as the length of the gut.

The scattered osteological drawings, which show Leonardo at his best, give evidence of first-hand observation little affected by the teachings of Galen and Ibn Sina. The curvatures of the spinal column were for the first time represented correctly, the sacrum was described as of five rather than, as formerly, of three segments and the column was described as consisting of 31 vertebrae (including two coccygeal segments). The correct tilt of the pelvis was recognized and there are figures which for the first time represent the nasolacrymal canal and the maxillary, frontal and sphenoidal sinuses. On the whole, the bones of the thorax and extremities insofar as they were investigated were correctly treated. The traditional osteological dogma cropped out but rarely, as for example in the sternum which was described as consisting of six distinct sternebrae.

In the discussion of muscles, as well as of bones, Leonardo stressed their functional or mechanical features. The actions of muscles were studied individually as well as in their relations to such major functions as respiration

* Hunter wrote that in his opinion "Leonardo was the best anatomist at that time in the whole world."

and the maintenance of posture. Although a number of deeper lying muscles (the orbital group, the pterygoids, the tongue muscles, the infrahyoid group, the supinator, gluteus minimus and quadratus plantae) were passed by, intelligent treatment was given to the extremity muscles, the facial muscles, the chest muscles, the larger neck muscles and the deep muscles of the back. The abdominal musculature was poorly handled and the details of attachment of occasional other muscles, such as the serratus anterior and trapezius, were uncertain; Leonardo along with his successors of a century and a half lacked an adequate terminology for muscles; these structures were designated by letters of the alphabet or, following the clumsy nomenclature of Galen, by descriptive phrases. Nevertheless, many of the muscles were illustrated in a way that showed an understanding of their functional relationships. Leonardo developed two new methods for muscle study: first, the use of cross sections and, second, the use of models formed of wires extending on the dried skeleton from the origin to the insertion of the muscles.

The heart was "a muscle, the first in strength and most potential among other muscles." This organ, usually that of the ox, was dissected, sectioned, diagrammed and modelled. The apex, base, fibrocartilaginous rings, valves and the cavities of the organ were described and figured. In his concepts on valve action and in the figures showing two atria as well as two ventricles, Leonardo was distinctly advanced over his predecessors. Even such structures as the foramen ovale, antrioventricular bundle and aortic sinuses likewise were referred to.

Although Leonardo's knowledge of the blood vessels, nerves and viscera was influenced to a large extent by the traditional anatomical views of Aristotle, Galen, Ibn Sina and Mondino and was ordinarily derived from animal rather than human dissection, a number of structures were better treated than they had ever been before. This was true of the larynx, ventricles of the brain, thyroid gland and uterus. The anatomy of nerves and blood vessels, however, followed the conventional interpretation as did that dealing with the viscera. Leonardo, like other anatomists of the Middle Ages and Renaissance, was dominated by the concepts of the humoral physiology, though in several respects he differed in interpretation from his source books. The breadth of physiological viewpoint may be suggested by a quotation dealing with metabolism:

> The body of anything whatsoever that receives nourishment continually dies and is continually renewed. For the nourishment cannot enter except in those places where the preceding nourishment is exhausted, and if it is exhausted it no longer has life. Unless therefore you supply nourishment equivalent to that which has departed, the life fails in its vigour; and if you deprive it of this nourishment, the life is completely destroyed. But if you supply it with just so much as is destroyed day by day, then it renews its life just as much as it is consumed; like the light of this candle formed by the nourishment given to it by the fat of this candle, which light is also continually renewed by swiftest succour from beneath, in proportion as the upper part is consumed and dies, and in dying becomes changed from radiant light to murky smoke. And this death extends for so long as the smoke continues; and the period of duration of the smoke is the same as that of what feeds it, and in

an instant the whole light dies and is entirely regenerated by the movement of that which nourishes it; and its life receives from it also its ebb and flow, as the flicker of its point serves to show us. The same process also comes to pass in the bodies of the animals. . . . *

His independent treatment was exhibited most often in those structural features having a major mechanical action: the larynx in relation to voice, the respiratory musculature, the pulsation of the heart and the mechanism of bodily motion. In these matters, Leonardo was vastly ahead of his contemporaries; in fact, it may be said that he appreciated the interdependence of structure and function better than any other anatomist up to his time except perhaps Aristotle. He believed that nature did not permit superfluous structures, thus every part had its function in the economy of the body. Accordingly, it was the work of the anatomist to determine what these functions might be.

Although structure with its functional relationships was Leonardo's dominant interest, his studies show that he had a comparative anatomical viewpoint that was not exceeded till the time of Belon (died 1564) and Coiter (died 1600). He believed that obscure structures of the human could be more fully understood by the study of equivalent structures as they appeared better developed in one animal or another. From an embryological viewpoint certain of his investigations, together with a few by Berengario da Carpi, stand out as the only significant examples of this study since the Greeks and before Girolamo Fabrizio (died 1619).

Fundamental as many of Leonardo's results were, they remained practically unknown to the anatomical world of the Renaissance, since his work consisted of unsystematized memoranda in his folio notebooks which formed essentially a research diary in which careful sketches, notes from the literature, conventionalized diagrams and philosophical speculations intermingled with idle pen designs, notes of expenditures and notations suggesting further studies. Leonardo intended to write an anatomy, but the work did not get beyond the planning stage.

ANATOMY AT THE END OF THE FIFTEENTH CENTURY

During Leonardo's lifetime an extensive anatomical literature both ancient and medieval was available to students. A great number of medical books had been published and many others were in circulation in manuscript form. Translations of Galen's anatomical works, "De juvamentis membranorum," "De interiorbus," "De usu partem" and "De musculorum motu," together with Aristotle's "historia animalium" and "De partibus animalium" and the minor works of Soranus, Rufus and Vindicianus (fl. c. 370) gave the major part of ancient anatomy. The anatomical sections of Ibn Sina, al-Razi, 'Ali Ibn 'Abbas, Serapion and Ibn Massawaih were likewise obtainable. Most of the truly European texts, Mondino's dissection guide and that of da Vigevano, the surgical books of such men as de Mondeville, Saliceto, de Chauliac and Lanfranc, the Salernitan treatises and the provincial anatomical manuscripts were available and many were in print. At the time we are considering all of

---

* Quoted from McCurdy.[26]

these works were in use and none was truly obsolete.

The Greek and Arabian works were the principal sources of anatomical information while the medieval works served as convenient compendia of the older knowledge. As a matter of fact, the anatomies, other than the dissection guides of Mondino and da Vigevano and the Salernitan demonstrations, were nothing but abbreviated abstracts of the larger Arabian treatises in which the order and content were essentially unchanged. The anatomies of 'Ali Ibn 'Abbas and Ibn Sina were a little more than twice the length of the longer medieval texts, their descriptions of various structures were more complete, more intimately concerned with functional notions and less with speculations on the teleological significance of parts. The medieval dissection guides were different in arrangement from the other contemporary treatises in so much as the order of treatment was conditioned by the convenience of the dissection technique. The texts were almost uniform in their presentation of a theoretical anatomy thought to apply to the human but based almost wholly on the dissection of lower animals. Although dissections on the human had been made for two centuries, many errors were perpetuated from text to text and the bulk of the content differed in only minor details. It was the habit of medieval writers to appropriate much from preceding authors without giving specific references. Plagiarism was the custom and critical treatment was so rare that a monotonous similarity in subject matter resulted. The original discoveries of the whole group of writers from the eleventh to the fifteenth century were negligible, though the old knowledge frequently appeared in new dress. One text would be more eloquent, more practical, more succinct or better illustrated than another, and because readers' tastes differ, all persisted and were used.

The Greek and Arabian texts were studied assiduously, often in their original languages. Differences in viewpoint and terminology were frequent in the two sources and the anatomist of the early sixteenth century usually favored one or the other. The Arabists and the Humanists, as the proponents of the Arabic and Greek doctrines were called, argued with one another and a better knowledge of the older works resulted. Extensive writings of anatomists during the first half of the sixteenth century bear witness to the struggles between the two factions.

If anatomists were becoming more intensely interested in bodily structure it was likewise true that anatomical studies were becoming more widespread in Europe. Dissections had been performed in countries north of the Alps in the fifteenth century, and, at the end of this period, texts of known authorship began to appear among the Teutonic people.

In 1497 the surgical text of Hieronymus Brunschwig of Strassburg (died 1533) appeared in printed form. This work which was written in German, contained a section of about 8000 words on anatomy. It presented the structure of the human body against a background of scholastic physiology and a terminology that was the characteristic mixture of Greek and Arabic of preceding authors. In arrangement of material and in method of treatment, de Mondeville's surgery appears to have been the model, though there is abundant evidence of familiarity with other sources: Greek, Arabic and European. After an introduction giving the characteristics of organs in general, the work proceeded to the head, cranium, brain, meninges and spinal cord; then the neck, back, shoulder, arm and chest were treated. Following the thoracic contents, the text dealt with the abdominal cavity, pelvis, male and female reproductive organs and legs. There was nothing in the work which could not be found in preceding volumes. It was essentially an anatomy prepared for German surgeons. The practical viewpoint appeared in occasional directions for incisions and comments on the nature of injured organs. The work was illustrated by a rough woodcut of the anterior aspect of the skeleton and the text seemed to stress bony structures more than other systems.

Brunschwig's surgery appeared in several editions during the quarter century following its first publication, but during this period three other anatomical works by Germans appeared and these likewise were several times reprinted during the interval. Johann Peyligk of Zeitz, a professor at Leipzig, wrote an anatomical summary in Latin called "Compendiosa capitis phisici declaratio" (1499) which was illustrated by a situs figure and several woodcut diagrams of isolated organs. Magnus Hundt (died 1519) appropriated much of Peyligk's work and added to the illustrations in his "Anthropologium" (1501). Hans von Gerssdorff in Strassburg wrote a surgery (1517), in which the anatomy was largely derived from de Chauliac and Mondino.

RENAISSANCE OF ANATOMY

The foregoing pages relate a story of medieval anatomy with its traditionally characteristic uniformity, its routine and its lack of originality. The anatomists before the sixteenth century, it is true, were serious-minded men who wondered at the complexity of the body and who realized that an understanding of human structures was essential for the medical man in his struggle with disease, but, with the exception of Leonardo, they lacked the insight and appreciation of method which in succeeding centuries were to raise anatomy from a colorless discipline. In the sixteenth century, anatomy arose as a vigorous science worthy of the most intelligent and energetic study. In less than a half century men came to doubt the infallibility of authority; they recorded their personal observations and thus became critical students who fought for the truth as it appeared in extensive and painstaking hours in the dissecting room. What caused this change of attitude at just this period is as difficult to explain as the causes of war or the rise and fall of empires. It was the scientific Renaissance, the broadening of outlook that was exemplified by such men as Copernicus (died 1543), Kepler (died 1630), and Galilei (died 1642) in astronomy; by Gilbert (died 1603) in physics; by Paracelsus (died 1541), van Helmont (died 1644) and Sanctorius (died 1636) in chemistry and medicine, and by Bacon (died 1626) and Descartes (died 1650) in philosophy. The change in outlook as it affected anatomy was gradual and there were perceptible indications of it before the sixteenth century. Occasionally, as in da Gradi's description of the ovary, an anatomist recorded observations which were more complete than those in the earlier literature. Anatomists such as da Sienna and Antonio Benivieni (died 1502) likewise showed evidence of a crumbling belief in the sufficiency of the authorities by asserting views of their own. A set of records by Benivieni on post-mortem examinations marks the first serious study of anatomy from the standpoint of pathological changes.

Contrasting with the occasional independent spirits of the fifteenth century, the later anatomists were with few exceptions competent and progressive describers of the bodily parts. Among the earliest of these men was Gabriel Zerbi (died 1505), anatomist at Padua, Bologna and Rome. In 1502 the more important of his two anatomical works appeared as an amplification of and commentary on Mondino's treatise. This work, although longer than the preceding medieval texts, was largely scholastic in emphasis. Its style and language were those of Mondino, and its content dealt with the abdomen, thorax, head and extremities together with sections on osteology, angeology and the character of the embryo. Although his dissections were largely performed on apes and lower animals, Zerbi's anatomy included observations which were more acute than the earlier works.* The oblique and transverse muscular layers in the stomach were described and the multilocular character of the organ in certain quadrupeds was noted. Comparisons of the stomach and intestinal structure were recorded. The length of the intestine was considered to be three times that of the body. The ligaments of the uterus and bladder and the fundus of the uterus itself were seen. The abdominal wall was subdivided, as is common today, into nine regions. The mediastinum was defined more precisely than formerly and the heart was described as having four cavities and lacking the third ventricle referred to by the older writers. In the cranial region, the olfactory nerves had been traced into the nasal cavity; the lacrymal glands and the puncta lacrimales were also described. Truly, despite frequent vague and circuitous modes of expression and the conventional medieval emphasis, Zerbi's observations reveal him as a more perspicuous anatomist than any of his predecessors for several hundred years.

A contemporary of Zerbi at Bologna, Alexander Achillini (died 1525), likewise gave evidence of superiority in his two anatomies which appeared in 1516 and 1522. He described the superficial veins of the arms somewhat better than they had been before and he indicated that the spinal cord did not descend in the vertebral canal below the first lumbar segment. He described the ileocecal valve and appendix, the cavity of the urachus, the duct of the submaxillary gland the contour and extent of the cerebral ventricles and the trochlear nerve.

More important to the history of anatomy than either Zerbi or Achillini was Jacob Berengario da Carpi (died 1550), professor at Pavia and Bologna, who was the first critical European anatomist. In his "Commentaries on Mondino" and in his "Shorter Introduction" which were published at the end of the second decade of the sixteenth century, Berengario recorded numerous observations of his own, criticized the statements of his predecessors and emphasized the value of personal study rather than trusting the authority of even such men as Galen. The medieval anatomist attempted to reconcile and harmonize the conflicting opinions of his sources; Berengario sought the testimony of his senses in solving inconsistencies. Occasionally, however, as in his denial of the olfactory nerves described by Zerbi, Berengario's critical sense gave way to scepticism. The innovation of injecting vessels together with the use of maceration technique extended the scope of Berengario's anatomy so that in the extent of his studies as in his critical attitude he was second only to the great Leonardo.

---

* The works of Zerbi and the later pre-Vesalians still await modern critical study and it is not possible at present to do more than outline this period of anatomical development.

Berengario improved on the description of the umbilical cord and its included blood vessels, on the folded peritoneum forming the mesentery, on the bile ducts and the papilla of the common bile duct and on the blood vessels of the pelvis. He first described anastomoses between the portal vein and inferior vena cava and his descriptions of the cardiac valves, omentum and transverse mesocolon showed much that was original. The first descriptions of the thymus gland, seminal vesicles, the arytenoid cartilages of the larynx, tympanic membrane and interventricular aqueduct were those of Berengario. His descriptions showed acquaintance with the frontal, ethmoidal and sphenoidal sinuses, with the corpora quadrigemina, pons and nasolacrymal duct. The multichambered uterus and the middle ventricle of the heart which had been traditional dogmas in anatomy were denied.

In the use of illustrations in his books Berengario showed tremendous advances over earlier writers. The twenty-one woodcuts prepared by an artistic hand were the first naturalistic drawings to illustrate an anatomy in a systematic fashion. In the natural living poses of the figures the illustrations were more like those of Leonardo than like those of the published anatomies.

Woodcut illustrations before Berengario were few in number. Numerous manuscript illustrations, to be sure, were known from the old five figure series and zodiac sketches which dated back four or five centuries to the earliest medieval period; but there were no printed anatomical figures which antedated Berengario by more than three decades.* The printed figures appeared either as illustrations of books or as isolated plates known as "fugitive sheets" which had a vogue during the first part of the sixteenth century. The "fugitive sheets" usually consisted of large plates or charts showing the skeleton or visceral diagrams, so constructed that laymen and physicians alike could use them. Ordinarily, the text illustrations were no more detailed.

Several years before Berengario's publication (in 1518) the "Mirror of Surgery" of Laurentius Phryesen von Colmar was published at Strassburg. This work was illustrated by a skeleton sketch and by a figure showing a dissection of the thoracic and abdominal viscera together with six small sketches showing the stages of a brain dissection. The figures which presented cadaver anatomy rather than naturalistic reconstructions illustrated the text.

---

* The texts which had been illustrated by one or more anatomical figures before Berengario were: Ketham's "Fasciculus medicinae" 1491, the Melerstat edition of Mondino 1493, Peter of Abano's "Conciliator differentiarum" 1496, Brunschwig's "Surgery" 1497, Peyligk's "Compendiosa" 1499, Hundt's "Anthropologium" 1501, Reische's "Margarita philosophica" 1503–04, the Adelphus edition of Mondino 1513, and Phryesen's "Spiegel der Artzny" 1518.

During the second quarter of the sixteenth century, anatomy as a science gained in vigor through the activities of a score of anatomists. Some of these men were energetic dissectors with little regard for the restrictions of tradition; others were scholars whose activities resulted in more accurate knowledge of Greek anatomy. Some were theorists or teachers; others were practical men.

Nicholas Massa (died 1569) was an independent writer who improved on many of the older descriptions. His account of the prostate gland was probably the first on this organ. Although he realized the importance of personal observation and was unimpressed by the statements of the older authorities he occasionally fell into error, for instance when he championed the idea of a third ventricle of the heart.

An extensive anatomical work appeared in the fourth decade of the sixteenth century through the efforts of Charles Estienne (died 1560). This treatise was the first published work illustrated with plates in which the whole arterial, venous or nervous systems were depicted. This method which had been used by Leonardo and harked back to the five figure series was one that Vesalius used most successfully. Estienne's advances related primarily to the study of joints, and to osteology and myology.

In Naples, anatomy was advanced through the efforts of Giovanni Filippo Ingrassias (died 1580). Though a worker in the tradition of Galen, this man made worthy contributions to osteology concerning the relationships of the assembled bones.

In 1541 Johannes Dryander (died 1560), a professor at Marburg, published an edition of Mondino illustrated by forty-six plates. These figures show a number of points of superiority over older ones and it has been suggested that some of them may have been stolen from Vesalius.

Among the most important of pre-Vesalian anatomists was Giambattista Canano (died 1578) of Ferrara. A treatise by him which was unfortunately discontinued after the author had seen the extent of Vesalius' notes and plates was in the process of preparation. Only the first part of Canano's work was published. This was an atlas of twenty-seven figures outlining stages of the dissection of the muscles of the arm. In the detail and accuracy of observation and the clarity of representation, the work showed a complete independence of the older authors. Although Canano has left no record of it, his contemporaries have accredited him with the discovery of valves in the azygos and renal veins.

Two men of the period compel attention, not because of their own publications, but because they were the teachers of famous anatomists. Johannes Gunther of Andernach (died 1574) and Jacques Dubois (Jacobus Sylvius, died 1555) were both professors at Paris. The former, whose anatomical studies were of minor importance, was a profound Greek scholar. His activities in this field, devoted as they were to translating and studying ancient anatomy, had a great effect on the purification of anatomical terminology. Dubois was likewise a Galenist but, unlike most Galenists, he made a number of contributions to practical anatomy aside from improving terminology. He advocated the use of descriptive names for muscles and vessels rather than the cumbersome method of referring to these by numbers or letters of the alphabet. Dubois also improved on the current descriptions of several skeletal and nervous structures.

The pupils of these teachers at the Paris school included a number of men who were important in the history of anatomy. These were Dryander and Estienne who have already been referred to, Louis Le Vasseur who published a series of four plates on human anatomy, Vulpinus, Andreas Vesalius and several men whose later activities gave them reputations in other fields than anatomy. Among these were Guillaume Rondelet (died 1566), who was best known for his studies on the natural history of fishes; Konrad Gesner (died 1565), the early renaissance zoologist, and the theologian Michael Servetus (died 1553) who called on anatomy to support his idea of a unitarian religious doctrine, and who discovered the pulmonary circulation.

Before the fifth decade of the sixteenth century, there was a great number of anatomists working in Europe. We have mentioned the more important who in a few years were to be augmented in number by Fabrizio, Coiter, Columbo (died 1559), Fallopio (died 1562), Guido (died 1569), Eustachio (died 1574), Varolio (died 1578), Valverde and others who are better known than the pre-Vesalian group with which we are here concerned. It is of interest to note that in England at this time John Caius (died 1573), a schoolfellow of Vesalius, and Thomas Vicary (died 1562), who were the leading physician and barber-surgeon respectively, were more backward than their European contemporaries. Caius taught the anatomy of Galen while Vicary in the first anatomy printed in English went back two and a half centuries to de Mondeville.

In the sixteenth century anatomy was a recognized field of activity of interest in itself and of practical importance in its relation to surgery. During the five hundred years preceding this time, anatomy in Europe had developed from a state in which the physician or scholar was as uninformed as the layman to a stage of vigor worthy of the best and freest minds. The early anatomist sought teleological explanations for the characteristics of bodily structure; the later writers were less interested in reasons, but they sought information as assiduously on the details of the divine plan. The functional ideas of the whole period were those of the humoral doctrine in large part as it was stated by Galen.

Throughout the period which we have been considering, the anatomical works of Galen formed a standard of comparison for all other works. During the last few decades, however, the authority of Galen was questioned, and, at this juncture, Vesalius appeared. He declared that the anatomy of Galen was not human anatomy, launched himself enthusiastically into tireless anatomical studies, prepared the most integrated anatomy that had yet appeared, secured accurate illustrations of artistic merit and published the work that all but rendered preceding texts obsolete. Vesalius was the man of his time who had the energy, insight, and influence to set a new standard for anatomy. To Vesalius is accorded the credit for establishing the science of modern anatomy, an achievement, however, which would have been impossible without the rich heritage of the preceding five centuries.

REFERENCES

1. **Ball**, J. M. Andreas Vesalius, the reformer of anatomy. St. Louis, Medical Science Press, 1910. 149 pp.
2. **Baker**, F. The two Sylviuses. An historical study. *Bull. Johns Hopkins Hosp.*, 20: no. 224, 329–339, 1909.
3. **Barboso Sueiro**, M. B. Jaco Berengário de Carpi, Notas sobre a sua vidae e obra. *Arq. de Anat. e Antropol.*, 13: no. 132, 387–395, 1929–30.
4. **Bednarski-Lwow**, A. Die anatomischen Augenbilder in den Handschriften des Roger Bacon, Johann Peckham und Witelo. *Arch. f. Geschichte d. Med.*, 24: Hft. 1, 60–78, 1931.
5. **Boeke**, J. André Vésale comme reformateur de l'anatomie. *Janus* 19: 508–522, 1914. Other articles on Vesalius by E. C. van Leersum, J. G. de Lint, L. Knappert, F. M. G. de Feyfer and J. J. van der Kleij appeared in the same volume, pp. 397–507 and 523.
6. **Campbell**, D. Arabian Medicine and Its Influence in the Middle Ages. London, Dutton, 1926, 2 vols., 442 pp.
7. **Cooper**, S. The medical school of Montpellier in the fourteenth century. Ann. Med. Hist., n.s., 2: no. 2, 164–195, 1930.
8. **Corner**, G. W. Anatomical Texts of the Earlier Middle Ages; a study in the transmission of culture, with a revised Latin text of Anatomia Cophonis and translations of four texts. Carnegie Inst. Pub. no. 364, Washington, D. C., 1927, pp. 112.
9. **Corner**, G. W. Anatomy. Clio Medica Series. N. Y., Hoeber, 1930, 82 pp.
10. **Cushing**, H., and **Streeter**, E. C. Facsimile edition with annotations of the Musculorum humani corporis picturata dissectio (Ferrara 1541) of Ionnes Baptista Canano (1515–1578) and Girolamo da Carpi (1501–1556). Monumento Medica IV, Florence, Lier, 1925.
11. **DeLint**, J. G. Atlas of the History of Medicine, Anatomy. N. Y., Hoeber, 1926, 96 pp.
12. **De Koning**, P. Trois traités d'anatomie arabes. Leyden, 1903, 781 pp.
13. **De Renzi**, S. Storia della medicina in Italia. Naples, Fillatra-Sebezio, 1845, Vol. 2, 474 pp.; vol. 3, 752 pp.
14. **Duval**, M., and **Guyer**, E. Histoire de l'anatomie plastique, le maitres, les livres et les écorchés. Paris, May, 1898, 151 pp.
15. **Ferrari (da Grado)**, H.-M. Une chaire de médecine au XV• siècle. Un professeur à l'université de Paris de 1432 à 1472. Paris, Alcan, 1891, 334 pp.
16. **Garrison**, F. H. The Principles of Anatomical Illustration before Vesalius, an inquiry into the rationale of artistic anatomy. N. Y., Hoeber, 1926, 58 pp.
17. **Garrison**, F. H. An Introduction to the History of Medicine with Medical Chronology, suggestions for study and bibliographical data. Ed. 4, Phila., Saunders, 1929, 996 pp.
18. **Gilson**, E. La philosophie au moyen age, de Scot Erigène à G. d' Occam. Paris, Payot, 1930, 318 pp.
19. **Gudger**, E. W. Some early and later illustrations of comparative osteology. Ann. Med. Hist., n.s., 1: no. 3, 334–355, 1929.
20. **Heinrich von Mondeville**, Die Anatomie der—Inaug. Dissert. in Medicin, d. Friedrich-Wilhelm Universität z. Berlin. Einleit. & Kap. I–II, W. Pankow, 37 pp., 1898; Kap. III–VI, Wm. Herda, 30 pp., 1899; Kap. VII–XII, D. P. Alban, 37 pp., 1898.
21. **Hugo de Santo Victore**. De bestius et alius rebus. Ch. LIX and LX, pp. 119–21. Opera Omnia, T. III, Patrologice Latina, T. CLXXVII. Ed. by J. P. Migne, Paris, 1879.
22. **Hunter**, R. H. A Short History of Anatomy. Ed. 2, London, Bale-Danielsson, 1931, 87 pp.
23. **Hyrtl**, J. Onomatologia Anatomica, Geschichte und Kritik der anatomischen Sprach der Gegenwart, mit besonderer Berücksichtigung ihrer Barbarismen, Widersinnigkeiten, Tropen, und grammatikalischen Fehler. Wein, Braumüller, 1880, 626 pp.
24. **Klebs**, A. C. Leonardo da Vinci's scientific research with particular reference to his investigations of the vascular system. *Boston M. & S. J.*, 175: 1–7, 1916.

25. Locy, W. A. Anatomical illustration before Vesalius. *J. Morphol.*, 22: 945–988, 1911.
26. McCurdy, E. Leonardo da Vinci's notebooks. N. Y., Empire State, 1923, 289 pp.
27. McMurrich, J. P. Leonardo da Vinci, the Anatomist (1452–1519). Carnegie Inst. Pub. no. 411. Balt., Williams & Wilkins, 1930, 265 pp.
28. Neuburger, M. History of Medicine. London, Hodder & Stoughton, 1910, 404 pp.
29. Nicaise, E. La grande chirurgie de Guy de Chauliac composée en l'an 1362. Avec notes, une introduction sur le moyen age sur la vie et les oeuvres de Guy de Chauliac, un glossaire et une table alphabétique. Paris, Baillière, 1890, 747 pp.
30. Nicaise, E. Chirurgie de maître Henri de Mondeville, composée de 1306 à 1320. Traduction française avec des notes, une introduction et un biographie. Paris, G. Baillière, 1893, 903 pp.
31. Nordenskiöld, E. The History of Biology, a survey translated from the Swedish by L. B. Eyre. N. Y., Knopf, 1928, 629 pp.
32. Pilcher, J. E. The Anatomy of Mundinus (a translation of the Adelphus edition, 1513). 1884. Ms. in Univ. of Mich. Library.
33. Pilcher, J. E. Mundinus and the anatomy of the middle ages. *Columbus M. J.*, pp. 343–357, 1896.
34. Pilcher, L. S. Jacobus Berengarius Carpensis and his commentaries on Mundinus. *Med. Lib. & Hist. J.*, I: no. 1, 1–8, 1903.
35. Pilcher, L. S. The Mondino myth. *Med. Lib. & Hist. J.*, 4: no. 4, 311–331, 1906.
36. Piumiati, G., and Ravaisson-Mollien, C. I manuscritti di Leonardo da Vinci. Paris, Louveyre, 1893, 156 pp.
37. Piumiati, G., and Ravaisson-Mollien, C. Leonard de Vinci fragments. Paris, Louveyre, 1901.
38. Portal, M. Histoire de l'anatomie et de la chirurgie. Paris, Didot, 1770, T.I, 658 pp.
39. Puschmann, T. A History of Medical Education from the Most Remote to the Most Recent Times. London, Lewis, 1891, 650 pp.
40. Ravaisson-Mollien, C. Les manuscrits de Léonard de Vinci. Paris, 1881–91, 6 v.
41. Richter, J. P. The Literary Works of Leonardo da Vinci, compiled and edited from the original manuscripts. London, Low, Marston, Searle & Rivington, 1883, 2 v.
42. Roth, M. Andreas Vesalius Bruxellensis. Berlin, 1892, 499 pp.
43. Roth, M. Vesal, Estiene, Tizian, Leonardo da Vinci. *I. Arch. f. Anat. u. Entw-gesch.*, Anat. Abt., pp. 79–95, 1905. A number of articles of frequently controversial nature by Roth, Holl and others appeared in this journal over a period of several years. Many of these are of interest in relation to renaissance anatomy.
44. Sarton, G. Introduction to the History of Science. Vol. I. From Homer to Omar Khayam, 839 pp. Vol. II. From Rabbi Ben Ezra to Roger Bacon, 1251 pp. Carnegie Inst. of Wash. Pub. no. 376, Balt., Williams & Wilkins, 1927–31.
45. Schaarschmidt, F. O. Die Anatomie des Wilhelm von Saliceto. Inaug-Dissert. in Med., Leipzig, 1919, 75 pp.
46. Singer, C. The figures of the Bristol Guy de Chauliac ms. (circa 1430). *Proc. Roy. Soc. Med.*, 10: Pt. II, Sect. Hist. Med., pp. 71–90, 1917.
47. Singer, C. A review of the medical literature of the dark ages, with a new text of about 1110. pp. 107–160. *Proc. Roy. Soc. Med.*, 10: Pt. II, Sect. Hist. Med., pp. 107–160, 1917.
48. Singer, C. The Evolution of Anatomy, a short history of anatomical and physiological discovery to Harvey. N. Y., Knopf, 1926, 209 pp.
49. Streeter, E. C. The role of certain Florentines in the history of anatomy, artistic and practical. *Bull. Johns Hopkins Hosp.*, 27: no. 302, 113–118, 1916.
50. Sudhoff, K. Tradition und Naturbeobachtung in den Illustrations medizinischer Handschriften und Frühdrucke vornehmlich des 15 Jahrhunderts. Studien zur Geschichte der Medizin, 1907, no. I, pp. 1–92.
51. Sudhoff, K. Ein Beitrag zur Geschichte der Anatomie in Mittelalter, spezielle der anatomischen Graphik nach Hand-

schriften des 9 bis 15 Jahrhunderts. Stud. zur Geschichte der Medizin, 1908, no. 4, pp. 1–94.

52. Sudhoff, K. Graphische Darstellungen innerer Korperorgane. *Arch. f. Geschichte d. Med.*, 7: 367–377, 1914. There are a number of articles in the same journal on the history of medieval anatomy by Sudhoff and his students. See particularly vols. 1, 7, 8, 10, 19, 20 and 23.

53. von Töply, R. R. Studien zur Geschichte der Anatomie im Mittelalter. Leipzig, Deuticke, 1898, 121 pp.

54. Vicary, T. The Anatomy of the Bodie of Man, Ed. 1577. With a life of Vicary, notes and an appendix of documents and illustrations. Ed. by F. J. and P. Furnivall, Early English Text Society, Extra s., no. 53, London, Trubner, 1887, 336 pp.

55. Walsh, J. J. The Popes and Science, the history of the papal relations to science during the middle ages and down to our own time. Knights of Columbus Ed., N. Y., Fordham Univ. Press, 1913 431 pp.

56. Wickersheimer, E. L'anatomie de Guido de Vigevano, médecin de la reine Jeanne de Bourgonne (1345). *Arch. f. Geschichte d. Med.*, 7: no. 1, 1–25, 1913.

57. Wieger, F. Geschichte der Medicin und Lehranstalten in Strassburg von Jahre 1497 bis zum Jahre 1872. Trubner, 1885, 173 pp.

58. Martinotti, G. I papi e l'anatomia. *L'Illust. Med. Ital.*, 5:no. 7, 101–105, 1923.

59. von Töply, R. R. Geschichte der Anatomie. Handb. d. Gesch. d. Med., Ed. Neuberger & Pagel, 2:155–326 (esp. sect. Mittelatter, 195–214) 1903.

[From Schenckius: Observationum Medicarum, Francofurti, 1609.]

EDITORIAL

POETRY AND THE DOCTORS

SOME years ago Dr. Charles L. Dana[1] published under the caption of "Poetry and the Doctors" a most delightful little book dealing with poetry written by physicians or about the medical profession, and in 1928 Oppenheimer[2] published his comprehensive, invaluable work on poetry and the medical profession in classical times. Sir Humphry Rolleston[3] has also written with his usual charm on the same subject.

But few English or American readers have even the slightest familiarity with medieval poetry or are even dimly aware of the great beauty which it occasionally possesses. Dr. Solomon Solis-Cohen, one of the most respected and best loved of the older physicians of Philadelphia, has distinguished himself not only as a teacher of medicine and author of many medical writings of note, and as a widely known consultant, but also as a foremost Hebrew scholar, particularly of the medieval period. Dr. Solis-Cohen has published from time to time translations of poems by Hebrew authors of that period. Now he has given us a truly beautiful book[4] of poetry translated from the works of Moses ibn Ezra, a Jewish poet who was born in Granada about 1055–60. Everyone knows the high culture which prevailed in Granada under Moslem rule, and also the great part played by the Jews in its development. Ibn Ezra belonged to a prominent family and he was brought up in elegance and refinement and given every educational opportunity. According to Dr. Brody, in addition to becoming a master of Hebrew literature he was also an Arabic scholar and was thoroughly versed in both Greek and Arabian philosophy. About the year 1090 Abdallah, the ruler of Granada, was overthrown and the rule of the city passed into the hands of the Almoravides, who instituted a persecution of the Jews, driving most of them from the city. Moses ibn Ezra fled to Castile, then under Christian domination, where his lot and that of his unfortunate co-religionists was probably worse than it would have been had they remained in Granada. Henceforth his life was passed in poverty and suffering until his death somewhere near the year 1138. To English readers his name is but little known except for Browning's familiar poem "Rabbi Ben Ezra." The present book gives the Hebrew text, with Dr. Solis-Cohen's translation on the opposite page. The translation is not literal, but for each poem the form of the English version varies so as to adapt it to its special content. Owing to limitation of space it is impossible to give quotations which would suffice to show the beauty of verse and philosophic depth of the really great poetry contained in this book. Many of the verses which are excerpted from the "Book Tarshish" bear a strong resemblance to some of those in the Rubayat of Omar Khayyam, as the following:

---

[1] Dana, C. L. Poetry and the Doctors. Woodstock, Vt., 1916.

[2] Oppenheimer. Medical and Allied Topics in Latin Poetry. London, 1928.

[3] Rolleston, Sir. H. Poetry and physic. ANN. MED. HIST., 8: 1, 1926.

[4] Selected Poems of Moses Ibn Ezra. Trans. into English by Solomon Solis-Cohen. From a Critical Text edited and annotated by Heinrich Brody. Phila., Jewish Pub. Soc. of America, 1934.

Greensward for; the leafy shade
  Of oakbough overhead;
To stay our souls, a jug of wine,
Thy cheek, dear maid, close-pressed to mine.
What need of bread!

Yet the general trend of Moses ibn Ezra's philosophy is very different from Omar's. We will conclude with one other beautiful specimen of his thought.

Let man remember all his days, that he
Toward death is borne from birth, unloiteringly,
So gently may it be, that oft he seems
Unto himself to be at rest, and deems
His state secure; but, natheless, every day
Beholds him further, further, on the way.
Like one on shipboard that reclines at ease,
Yet with the wingéd wings flies o'er the seas.

Having no knowledge of Hebrew it is impossible for the writer to state whether the great beauty of sentiment and of expression in the verses contained in this book are more due to the Author or the translator. The fact remains that we have here presented to us by a physician a most charming book of verse.

BOOK REVIEWS

One Hour of Medical History. By Benjamin Spector, M.D. Vol. 3. Boston, Tufts College Medical School, 1934.

Some years ago Dr. Spector began organizing among the students of Tufts College, in which he is professor of anatomy, a series of pageants illustrative of medical history. From the start these pageants have been most successful and have aroused much interest. The present series of tableaux begins with Imhotep, the Egyptian, and closes with Röntgen. Various great representatives of medicine and the allied sciences are impersonated by students, each giving a short speech or engaging in a dialogue illustrative of the contribution to science made by the personage he represents. These speeches are particularly good, as are the running comments which preface the tableaux. The book concludes with a "Historical-Bibliographical Demonstration," by James F. Ballard, which is a valuable addition. There are also a number of judiciously selected illustrations, a foreword by President Cousens of Tufts College, and a preface by Professor Sigerist. Dr. Spector is to be congratulated on the continued success of his project, as well as on its manifest usefulness. We can conceive of no better way of arousing the interest of students in the subject of medical history.

Scientific Organization in Seventeenth Century France (1620–1680). By Harcourt Brown. Balt., Williams and Wilkins, 1934.

This is the fifth book in the series published by the History of Science Society with the aid of funds contributed by the Carnegie Corporation and it worthily upholds the high standard set by its predecessors. Since the publication of the late Dr. Ornstein's invaluable pioneer work on the "Role of Scientific Societies in the Seventeenth Century," in which she showed how very much greater influence these societies exerted in forwarding scientific research, than the universities, and demonstrated the immense service they performed in all the various paths of scientific investigation, their history has attracted much attention. The number of learned societies which were organized in Italy and France during the seventeenth century is truly remarkable, and the work of many of them had a great influence on the development of science, and the habit of scientific thinking. In England the Royal Society was founded shortly after the middle of the century and from its very beginning under the auspices of men like Boyle, Hooke, Willis and Wren, it played a most important part in the scientific world. Dr. Brown's work describes the many French societies which beginning with the Cabinet of the Dupuy brothers in the house of the historian de Thou were ultimately to culminate in the development of the Institute de France with its component academies. The author has disentangled the usually somewhat obscure history of the origin and nature of the "Conferences" of Theophraste Renaudot, held in connection with his "Bureau d'Addresse," and the academies established by Mersenne, Montmor, Bourdelot, etc., at which scientific papers were read and discussed, and demonstrations made of experiments in physics and anatomy. We can appreciate somewhat the value of the work done at these meetings when we find among the participants Descartes, Gassendi and Regnier de Graaf. Many English scientists were visitors at these meetings among them Hobbes, Sir Knelm Digby, Sir William Petty, and Oldenburg, the future secretary of the Royal Society. Dr. Brown proves conclusively, however, that the often made assertion that the foundation of the Royal Society was due to Oldenburg's observation of these societies is not correct. Oldenburg was not a founder of the Royal Society, his election to that body not taking place until February, 1661, after the Society had come into existence. The Royal Society originated shortly after the Civil War, and was a native outgrowth from the activities of a group of ardent scientific workers at Oxford and at Gresham College in London. Dr. Brown's work is founded on source material of the most authentic character, and he clears up many obscure points and corrects numerous inaccuracies which have clouded the history of this important epoch in the history of scientific thought. The work contains a valuable list of manuscript source material and is concluded with an adequate index.

Journal of Technical Methods and Bulletin of the International Association of Medical Museums. No. XIII. Ed. by Maude E. Abbott, M.D. Montreal, McGill Univ., March, 1934.

A short statement on behalf of the Editorial Committee of this valuable publication outlines a new editorial policy which it is proposed to follow in its subsequent issues. After directing attention to the large number of periodicals which are now published covering all the various fields of morbid anatomy, pathology, bacteriology and allied subjects it states that this Journal and Bulletin is the only one devoted to technical methods with especial reference to Museum laboratory procedures, and adds that henceforth its scope is to be limited entirely to the "fields of museum and autopsy technique, photographic methods, microscopic technique especially as applied to museum material, injection methods, and teratology, especially congenital anomalies of the heart," with the Proceedings of the International Association of Medical Museums and reports on its special activities. We believe and hope that this policy will prove successful. It will afford a fine medium for the publication of the extremely necessary material outlined in Dr. Moore's statement and assuredly there is an abundance of good matter of that sort which should be concentrated in a special publication. Another important change in policy is that hereafter the publication shall be annual.

It is gratifying to note that the usefulness of the Bulletin has received worthy recognition in the shape of a grant from the Carnegie Institution of New York to the Association for the special purpose of the maintenance of its publications. Under the able guidance of Dr. Abbott the Bulletin has won widespread recognition of its value and it is gratifying to find that it has also attained substantial recognition enabling it to be continued on its new plan.

German Medicine. By W. Haberling, M.D., Professor of the History of Medicine, Academy of Dusseldorf. Trans. by Jules Freund, M.D., Ex-Associate in Bacteriology, University of Pennsylvania. 9 Illus. Clio Medica XIII. Ed. by Edward B. Krumbhaar, M.D. N. Y., Paul B. Hoeber, Inc. 1934.

The Author of this well-balanced little book has wisely devoted but little space to the early history of medicine in Germany because there is not very much of real importance to write about. The first two chapters dealing with German Medicine in Ancient Times and in the Middle Ages are very brief.

Chapter III, with the caption "The Awakening" deals chiefly with Paracelsus, and in accord with Sudhoff and other recent German historians awards him a higher rank as a scientist than most non-Teutonic historians allow. In the next chapter devoted to German Medicine in the Seventeenth Century, Haberling describes some of the real contributions made by Germans to the new anatomy and physiology begun with the discovery of Harvey. Schneider showed that the mucus in the nose was the secretion of the nasal mucous membrane and did not originate in the brain as heretofore supposed. Rivinius, Wepfer, Peyer, Brunner, and others discovered various glands and ducts in the digestive tract and elucidated many facts bearing on the digestive function.

In Chapter v the work of the great German systematists of the Eighteenth Century, Frederich Hoffmann, George Ernst Stahl, Albrecht von Haller and Gerhard van Swieten is described, as well as the contributions to anatomy made by Meckel, Lieberkuhn and Wrisberg, and to embryology by Wolff. The last of these great anatomists of the eighteenth century was von Sömmering whose influence extended far into the succeeding era.

The last four chapters cover the history of German Medicine from the beginning of the nineteenth century to the present day. The wonderful era of scientific achievement in German Medicine was preceded by several curious outcroppings of pseudo-scientific systems. F. A. Mesmer, whom the Author terms "the first psychotherapist," first claimed that he was able to treat all kinds of diseases with magnetism drawn from pieces of steel. Soon he announced that the steel was unnecessary because by simply stroking the affected parts he could effect a cure by his own magnetic force. Many men of great intelligence and professional standing such as Hufeland, Heim and Lavater believed in his teachings and they were widely adopted, and as Haberling says, "Magnetism did and still does much harm." Justin Herner introduced a modification of Mesmer's system, explaining it by supernatural forces whose aid was to be procured by prayer and invocations. Hahnemann's system had many followers and in much modified form lives to the present day.

The era of modern scientific medicine in Germany began with the great work of Johannes Müller and Theodor Schwann. The latter's announcement of the cell theory completely revolutionized physiology and pathology. It is impossible to even briefly notice the many scientists who established their work and carried it on to yet greater heights. Virchow's "Cellular Pathology," published in 1858, marked its apogee. The next great epoch is distinguished above all by the work of Robert Koch and his disciples. Contemporaneously von Helmholtz invented the ophthalmoscope and van Graefe developed modern ophthalmology, and Türck and Czermak developed the science of laryngoscopy after Garcia had shown that the larynx could be seen by means of a mirror and reflected light. No wonder students from all over the world flocked to Germany and Austria for postgraduate work. The discoveries of Ehrlich, Rontgen, Loefler and others maintained the standards set by their predecessors.

This excellent little work gives in concise form a very complete record of a most important department of medical history.

ANNALS OF MEDICAL HISTORY

Editor: FRANCIS R. PACKARD, M.D., Philadelphia

CONTENTS OF NEW SERIES, VOLUME FOUR, 1932

Major, William Clowes and His "Profitable and Necessarie Booke of Observations"; Dempster, John Locke; Peachey, William Andre, Antomist; Mason, Early Medical Education in the Far South; Savitz, Maimonides' Hygiene of the Soul; Munro and Haagensen, Treatment of Cardiac Disease in the 12th Century; Van Patten, Medical Literature of Guatemala; Herringham, Life and Times of Dr. William Harvey; Walsh, Refutation of Ilberg as to the Date of Galen's Birth; Major, Raymond Vieussens and His Treatise on the Heart; Baumgartner, Leonardo Da Vinci as a Physiologist; Franchini, Origin of the University of Bulogne; Montgomery, Historical Position of Coccidioides Immitis; Van Patten, Obstetrics in Mexico Prior to 1600; Medical Incunabula in the University of California Medical School Library; Packard, How London and Edinburgh Influenced Medicine in Philadelphia in the 18th Century; Lewis, Washington's Last Illness; Waring, St. Philip's Hospital in Charlestown in Carolina; Waite, Lydia Folger Fowler; Cerna, Pharmacology of the Ancient Mexicans; Bishop, Thomas Dimsdale and the Inoculation of Catherine the Great of Russia; Rosenthal, David Gruby; Petersen, Struensee; Raap, Hernia Healers; Roth, "Original Morton Inhaler" for Ether; Tovell, Medical History of Bruges and the Hospital of St. John; Zimmerman and Howell, History of Blood Transfusion; Pratt, Swedenborg on the Thebesian Blood Flow of the Heart; Middleton, William Shippen, Jr.; Mengert, Origin of the Male Midwife; Cameron, History of Madder (Rubia Tinctorum); Barach, Entelechy and Scientific Determinism in Medicine; Bick, Medical Works of Oliver Wendell Holmes; Webb, Robert Koch; Smith, Koch's Views on the Stability of Species among Bacteria; Landis, Reception of Koch's Discovery in the U.S.; Friedenwald and Morrison, Some Incidents of Medical Interest in the Life of General Lafayette; Butler, Caligula; Harrison, Psychiatry in Historical Retrospect.

CONTENTS OF NEW SERIES, VOLUME FIVE, 1933

Hurd-Mead, History of Women in Medicine; Miller, William Beaumont; Blanton, Washington's Medical Knowledge; Herrick, Why I Read Chaucer at Seventy; Denninger, Paleopathological Evidence of Paget's Disease; Brunschwig, Jean Frederic Lobstein; Harrison, Psychiatry in Historical Retrospect; Jackson, Hall Jackson of Portsmouth; Lloyd, Dr. Guillotin's Idea; Packard, Practice of Medicine in Philadelphia; Bryan, History of Laryngology and Rhinology; Ruhrah, Willard Parker; Sa'di, Reflection of Arabian Medicine at Salerno and Montpellier; Munro & Haagensen, Arabian Medicine as Represented in the Memoirs of Usamah Ibn-Munqidh; Wesson, George E. Goodfellow; Shaw, Short History of the Sweating Sickness; von Oettingen, Earliest Suggestion of the Use of Cocaine for Local Anesthesia; Gibson, Theodore Turquet de Mayerne; Adelmann, "De Ovorum Gallinaceorum," of Volcher Coiter; Beeson, Pierre Joseph Desault; Jones & Tocantins, History of Purpura Hemorrhagica; Chance, Goethe and His Theory of Colors; Rolleston, The Two Heberdens; Walkling, Henry Ingersoll Bowditch; Gibson, Theodore Turquet de Mayerne's "Praxis Medica"; Keevil, William Anderson; Baumgartner & Ramsey, Johann Peter Frank and His "System einer vollstaendigen medicinischen Polizey"; Townsend, History of Influenza Epidemics; Turner, Graefenberg, the Shepard Family's Medical School; Radner, Intolerance of Great Men.

PAUL B. HOEBER

VOL. 6

1934

NO. 6 · NOVEMBER

ANNALS OF MEDICAL HISTORY

FRANCIS·R·PACKARD·M·D·EDITOR·[PHILADELPHIA]
PUBLISHED BIMONTHLY BY PAUL·B·HOEBER·INC
SEVENTY·SIX FIFTH AVENUE·NEW YORK·N·Y·

Entered as second class matter June 2, 1917, at the post office at New York, N. Y., under the Act of March 3, 1879.
Yearly Subscription, $10.00. Single numbers, $2.50.

ANNALS OF MEDICAL HISTORY

Editor: FRANCIS R. PACKARD, M.D., Philadelphia

CONTENTS OF NEW SERIES, VOLUME ONE, 1929

THOMPSON, Strenuous Life of a Physician in the 18th Century; JOHNSON, William Potter Memorial Lecture. Introductory; COHN, Development of the Harveian Circulation; BURGER, Appreciation of the Medical Profession and the Divine Origin of Medicine; CHANCE, Squier Littell, M.D., KRUMBHAAR, Bibliographical Matters Pertaining to the Discovery of the Circulation of the Blood; WOOD, Martin Lister; WOOLF, Hunterian Epoch; HARVEY, History of Hemostasis; MILLER, William Beaumont and His Book; BURR, Dr. James and His Medical Dictionary; MOORE, Gabriel Honore de Riquetti; RODDIS, Garcia da Orta; RUSH, Arnold Adolf Berthold; TOOMEY, First General Medical Treatise Published in the Western Hemisphere; PEACHEY, John Fewster; POWER, Memorial Group of the Harvey Family; KRUMBHAAR, Bath Olivers—Doctor and Biscuit; WOOD, Julius Millingen; ROBERTSON, "Castel of Helth" and its Author, Sir Thomas Elyot; ADLER, Albrecht von Graefe; PARSONS, Haitian Medicine; HAMMETT, Anatomical Knowledge of the Ancient Hindus; GUDGER, Illustrations of Comparative Osteology; BEITER, Charles Edward Isaacs; WALSH, Date of Galen's Birth; PITFIELD, A Pitiful, Rickety, Gasping, Staggering, Stuttering Tomfool; MILLER, Diseases of Ancient Man; CRUMMER, Copy of Jenner Note Book; STRECKER, Reminiscenses from the Early Days of the Pennsylvania Hospital; WIESE, Larrey; GARRISON, Brief Note on Medical Philately; PIERSNER, Epilepsy in the Light of History; POOL & MCGOWAN, Surgery at the New York Hospital One Hundred Years Ago; ROLLESTON, Samuel Johnson's Medical Experiences; MACPHAIL, Evolution and Life; MIDDLETON, Philip Syng Physick; TAYLOR, S. Weir Mitchell; WAGONER, Statuette Depicting a Posterior Superior Dislocation of the Hip; WEEKS, David Ramsay; WARING, Incident in Early South Carolina Medicine; TODD, Medieval Physician; FRIEDENWALD, Manuscript Copies of the Medical Works of Isaac Judaeus; Diploma of a Jewish Graduate of Medicine of the University of Padua in 1695; BRUNSCHWIG, Hieronymus Brunschwig; SHRYOCK, Origins and Significance of the Public Health Movement in the United States; PLEADWELL, Ninian Pinckney, M.D.; MOODIE, Surgery in Pre-Columbian Peru.

CONTENTS OF NEW SERIES, VOLUME TWO, 1930

ROLLESTON, Sir Thomas Browne; SUDHOFF, Sketches; CRUMMER, Original Drawing of the Title Page of Vesalius' Fabricia; CHANCE, On Hippocrates and the Aphorisms; MAJOR, History of Taking the Blood Pressure; FRANCHINI, Lazarro Spallanzani; HALL, General and Medical Science 100 Years Ago; BEESON, Orfila—Pioneer Toxicologist; SCARLETT, Jean Paul Marat, The Physician as Revolutionist; WIESE, Semmelweiss: PLEADWELL, Ninian Pinckney; LEAKE, Roman Architectural Hygiene; COOPER, The Medical School of Montpellier in the 14th Century; HANCOCK, The Irish School of Medicine; JACOBSEN, John Coakley Lettsom and His Relations with Jonathan Carver, Explorer; CAMDEN, Elizabethan Astrological Medicine; MILLER, Apollo; BRAGMAN, The Medical Wisdom of Nathaniel Hawthorne; ROLLESTON, Medical Friendships, Clubs and Societies; WILSON, Alphonse Francois Marie Guerin; HUME, Medicine in China, Old and New; HOWELL, Doctor George Fordyce and His Times; BEESON, Corvisart, His Life and Works; SHRYOCK, Public Relations of the Medical Profession in Great Britain and the United States: 1600-1870; Incunabula in New York Academy of Medicine, Library of Washington University School of Medicine, Medical Library of the University of Rochester, Cleveland Medical Library Association, Boston Medical Library, Lane Medical Library, Stanford University; WARTHIN, The Physician of the Dance of Death; HARE, Stephen Girard and the Great Epidemic of Yellow Fever in 1793; DENNINGER, History of Substances known as Aphrodisiacs; MILLER, History of Syphilis; MONTGOMERY, Hieronymus Frascastorius, Author of a Poem Called Syphilis; HIRSCH, Historical Survey of Gonorrhea; LEOPOLD, Aretaeus the Cappadocian; His Contribution to Diabetes Mellitus; JONES, Practice of Medicine Among Our Aborigines; LLOYD, Benjamin Rush and His Critics; PEACHEY, William Hunter's Obstetrical Career; CAULFIELD, Infant Welfare Movement in the Eighteenth Century; ROGERS, The History of Craniotomy; TELLO & WILLIAMS, An Ancient Syphilitic Skull from Paracas in Peru; PITFIELD, John Keats, Reactions of a Genius to Tuberculosis and Other Adversities; MAJOR, Papyrus Ebers; MOORMAN, Tuberculosis and Genius as Manifested in St. Francis of Assisi; GOLDSTEIN, Influence of Claude Bernard on Physiological Concepts; MIDDLETON, John Syng Dorsey; FREEMAN, Lewis Morgan; VON STORCH, Essay on the History of Epilepsy; HOOVER, Significance of the Scientific Conquest of the Air.

CONTENTS OF NEW SERIES, VOLUME THREE, 1931

CORNER, Rise of Medicine at Salerno in the 12th Century; THORNDIKE, Letter from a Physician of Valencia to His Two Sons; BAUMANN, An Antique Physiological Problem; ABT, Christopher Wilhelm Hufeland; CUTTER, Intern Service in the Old Days at Chambers Street Hospital; SEIBELS, Thomas Dale, M.D.; FRANCHINI, Antonio Vallisneri; SCHENCK, Mutter Museum; WARTHIN, Physician of the Dance of Death; Medical Incunabula in the Library of the University of Michigan Medical School, John Crerar Library of Chicago, Library of the College of Physicians of Philadelphia, Library of the Royal College of Surgeons of England; POWER, Touchpieces and the Cure of the King's Evil; BAST, Max Johann Sigismund Schultze; MACHT, Louis Lewin; WALSH, Refutation of the Charges of Cowardice Made against Galen; BURR, Galen; MAJOR, Landmarks in the History of Lead Poisoning; MILLER, The Pneumatic Institution of Thomas Beddoes; ROLLESTON, History of Cinchona and Its Therapeutics; ELSBERG, Edwin Smith Surgical Papyrus; FRANCHINI, Ch. Alphonse Laveran; DRAKE, Pap and Panada; REED, John Francis Delong, A Frontier Physician; PODOLSKY, Physician Physicists; CLEMENS, Notes on English Medicine (George IV-Henry VIII); SARMA, Hindu Medicine and Its Antiquity; BARKLEY, Dr. Samuel Brown; HALDIN-DAVIS, Foundations of British Dermatology; JELKS, John Gorrie; ANDERSON, Thomas Holley Chivers; CHANCE, Nicholas Culpeper; PEACHEY, Two Unpublished Letters of Matthew Baillie, M.D.; MOORMAN, Tuberculosis and Genius—Francis Thompson; HELLMAN, An Unpublished Diary of Edward Jenner; ELGOOD, Persian Monograph on Syphilis; KRUMBHAAR, Erasmus Darwin and His Relation to the Doctrine of Evolution; CAWADIAS, From Epidauros to Galenos; WILSON, Dr. J. C. Nott and the Transmission of Yellow Fever; WIESE AND GILBERT, Theodore Kocher; SHUMAN, Richard Dean's Tomb; PARSONS, The Adventurous Goldberger; MONTGOMERY, Naming of Alopecia Areata; BROWNING, Relation of Physicians to Early American Geology; LAMBERT, Phineas Fletcher and Francis Quarles and the Purple Island; LUSK, Carl von Voit, Master and Friend; CRAVENER, An Orthopedic Clinic of 1147 A.D.; FRANKLIN, Richard Lower and His "De Corde"; BEESON, Anton Tchekhov; KEMBLE, Henry VIII; MOORMAN, Tuberculosis and Genius—Voltaire; CARSON, The Iliac Passion; WEINBERG, Gigantism and Acromegaly.